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Waste Tank Summary Report for Month Ending May 31, 1999

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and Waste Management

FLUOR DANIEL HANFORD, INC.
Richland, Washington

Hanford Management and Integration Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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Lockheed Martin Hanford Corp.

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WASTE TANK SUMMARY REPORT

B. M. Hanlon

ABSTRACT

This report is the official inventory for radioactive waste stored in underground tanks in the 200 Areas at the Hanford Site. Data that depict the status of stored radioactive waste and tank vessel integrity are contained within the report. This report provides data on each of the existing 177 large underground waste storage tanks and 63 smaller miscellaneous underground storage tanks and special surveillance facilities, and supplemental information regarding tank surveillance anomalies and ongoing investigations. This report is intended to meet the requirement of U. S. Department of Energy-Richland Operations Office Order 5820.2A, Chapter I, Section 3.e. (3) (DOE_RL, 1990, Radioactive Waste Management, U. S. Department of Energy-Richland Operations Office, Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm tanks.

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CONTENTS

METRIC CONVERSION CHART		
1 inch	=	2.54 centimeters
1 foot	=	30.48 centimeters
1 gallon	=	3.80 liters
1 ton	=	0.90 metric tons

$$°F = \left(\frac{9}{5}°C\right) + 32$$

1 Btu/h = 2.930711 E-01 watts
(International Table)

WASTE TANK SUMMARY REPORT FOR MONTH ENDING MAY 31, 1999

Note: Changes from the previous month are in bold print.

I. WASTE TANK STATUS

Category	Quantity	Date of Last Change
Double-Shell Tanks[c]	28 double-shell	10/86
Single-Shell Tanks[a]	149 single-shell	1966[d]
Assumed Leaker Tanks	67 single-shell	7/93
Sound Tanks	28 double-shell 82 single-shell	1986 7/93
Interim Stabilized Tanks[b]	119 single-shell	11/97
Not Interim Stabilized[e]	30 single-shell	11/97
Intrusion Prevention Completed	108 single-shell	09/96
Controlled, Clean, and Stable[h]	36 single-shell	09/96
Watch List Tanks[f] Total	22 single-shell 6 double-shell 28 tanks	12/98[g] 6/93

[a] All 149 single-shell tanks were removed from service (i.e., no longer authorized to receive waste) as of November 21, 1980.

[b] Of the 119 tanks classified as Interim Stabilized, 64 are listed as Assumed Leakers. The total of 119 Interim Stabilized tanks includes one tank (B-202) that does not meet current established interim stabilization administrative procedures. (See Table I-1 footnotes, item #2)

[c] Six double-shell tanks are currently included on the Hydrogen Watch List and are thus prohibited from receiving waste in accordance with "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510.

[d] Last date the single-shell tanks went into service (Tank Farm AX).

[e] Three of these tanks are Assumed Leakers (BY-105, BY-106, SX-104). (See Table H-1)

[f] See Section A tables for more information on Watch List Tanks.

[g] Dates for the Watch List tanks are "officially added to or removed from the Watch List" dates. Eighteen tanks were removed from the Organics Watch List in December 1998; two tanks still remain on this watch list. See Table A-1, Watch List Tanks, for further information.)

[h] The TY tank farm was officially declared Controlled, Clean, and Stable in March 1996. The TX tank farm and BX tank farms were declared CCS in September 1996. (BX-103 has been declared to have met current interim stabilization criteria, and is included in CCS - see also Appendix I).

II. WASTE TANK INVESTIGATIONS

This section includes all single- or double-shell tanks or catch tanks which are showing surface level or interstitial liquid level (ILL) decreases, or drywell radiation level increases in excess of established criteria.

Tank 241-B-111: The interstitial level dropped about 1.5 inches at the end of September 1998 (-3 standard deviations from the baseline which exceeded the criteria established for this tank). The tank has been under investigation as a possible leaker since but the data is inclusive. A small localized gas release would provide the same response, and the expert panel indicated that both a leak and a small gas release were of similar probability as a mechanism for the level drop. The level has not decreased further since October 1998, and the tank now appears stable. Per Plant Review Committee (PRC) direction, the interstitial level continues to be tracked against a 2 standard deviation criteria versus the baseline and the trend data will be evaluated in two-to-three months.

> **Resolution Status: In May 1999, the additional data on B-111 was combined with the previous information and a re-evaluation of the leak assessment was initiated. Preliminary results that the tank is not leaking were presented to the PRC on May 19, 1999. The PRC concurred with the preliminary results and requested that the assessment be finalized. See also Off-Normal Occurrence Report (item #10) below.**

A. Assumed Leakers or Assumed Re-leakers: (See Appendix C for definition of "Re-leaker")

This section includes all single- or double-shell tanks or catch tanks for which an off-normal or unusual occurrence report has been issued, or for which a waste tank investigation is in progress, for assumed leaks or re-leaks. Tanks/catch tanks will remain on this list until either a) completion of Interim Stabilization, b) the updated occurrence report indicates that the tank/catch tank is not an assumed leaker, or c) the investigation is completed.

There are currently no tanks for which an off-normal or unusual occurrence report has been issued for assumed leaks or re-leaks.

B. Tanks with increases indicating possible intrusions:

This section includes all single-shell tanks and related receiver tanks for which the surveillance data show that the surface level or ILL has met or exceeded the increase criteria, or are still being investigated.

Candidate Intrusion List: Increase criteria in the following tanks indicate possible intrusions. Higher priority safety work on Tank SY-101 has taken precedence over these investigations.

Tank 241-B-202
Tank 241-BX-101
Tank 241-BX-103
Tank 241-BY-103
Tank 241-C-101
Tank 241-U-111

Catch Tank 241-AX-152: The liquid level in this catch tank was steady around 66.75 inches from the startup of Project W-030, Tank Farm Ventilation System," in March 1998 until late August 1998. The level then began to decrease. The October 1998 reading of 65 inches is 1.75 inches below the summer average. This is an active catch tank, routinely pumped, and deviations from baseline are not applicable per OSD-31. The decrease represents a significant change in trend and it is apparent that tank conditions changed around the end of August 1998.

> Resolution Status: Discrepancy Report #98-853 was issued on November 4, 1998. One possible cause under investigation is a change in flow path, causing an increase in evaporation. The tank was pumped down to 2.25 inches on November 13, 1998. Since that time the level has decreased to 0.00 inches. The Discrepancy Report will remain open and catch tank AX-152 will remain on the alert list until an

engineering investigation is complete. A work package was generated to perform an air flow rate assessment in the tank, and install a camera.

III. SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS

1. Single-Shell Tanks Saltwell Jet Pumping (See Table E-6 footnotes for further information)

Tank 241-C-106 - Waste removal operations were initiated on November 18, 1998. Commencement of sluicing (sludge removal) began the process of waste removal in the highest heat-generating single-shell storage tank. Wastes from C-106 will be pumped underground through a new specially constructed pipeline to AY-102. The ventilation system for AY-102 is designed for the anticipated heat load of the waste from C-106.

Sluicing of C-106 was conducted on May 24, 1999. An additional 3.2 inches of sludge was removed from this tank, bringing the total sludge removal to date to 35 inches. Thermocouples at the 28-inch level responded during sluicing, indicating sluice jet penetration to at least that level.

Tank 241-S-102 - **The waste was pumped directly to tank SY-102. In May 1999, 1.9 Kgallons were pumped: 3,359 gallons of dilution water and 1,358 gallons of water were used for transfer line flushes. A total of 29.7 Kgallons has been pumped from this tank since pumping started in March 1999.**

Tank 241-S-103 - **Saltwell pumping did not begin in May 1999 as anticipated. On May 24, the attempt to begin pumping failed when the pump could not be primed to start. It is believed that the foot valve was damaged during installation and will not operate properly. The bottom 4 feet of piping including the foot valve and jet pump will be replace during the first week in June.**

Tank 241-S-106 - **Pumping restarted on April 15, 1999, after an earlier pumping campaign in the 1980s. The waste was pumped directly to tank SY-102. In May 45.1 Kgallons were pumped: 798 gallons of water were used for transfer line flushes. A total of 168.9 Kgallons has been pumped from this tank since pumping began in the 1980s.**

Tank 241-SX-104 - **In May 1999, 17.1 Kgallons were pumped: 23,971 gallons of dilution water and 3,201 gallons of water for transfer line flushes were used. A total of 221.1Kgallons has been pumped from this tank since pumping started in the late 1980s.**

Tank 241-SX-106 - **In May 1999, 17.3 Kgallons were pumped: 14,760 gallons of dilution water and 2,888 gallons of water for transfer line flushes were used. A total of 58.6 Kgallons has been pumped from this tank since start of pumping in October 1998.**

Tank 241-T-104 - **No pumping was done in May 1999. A total of 147.6 Kgallons has been pumped from this tank since start of pumping in March 1996.**

Tank 241-T-110 - **No pumping was done in May 1999. A total of 46.1 Kgallons has been pumped from this tank start of pumping in May 1997.**

2. Single-Shell Tank Interim Stabilization Milestones

New single-shell tank interim stabilization milestones were negotiated in 1999 and are identified in the "Consent Decree." Even though the Consent Decree is not approved, it is being worked to, pending approval. See Table I-2. Single-Shell Tank Interim Stabilization Milestones and Consent Decree attachments for further information.

3. Tank Waste Remediation System Safety Initiatives

The U. S. Secretary of Energy has directed that six safety initiatives be implemented in the Tank Waste Remediation System Program to accelerate the mitigation/resolution of the high priority waste tank safety issues at the Hanford Site. Forty-two milestones were established for accomplishing the initiatives.

No Safety Initiatives were completed in May 1999.

The following Safety Initiatives remain to be completed:

SI 4a - Upgrade Alarm Panels in Seven Tank Farms
SI 4c - Complete Accelerated Walk-Downs and Field Verify Essential Drawings

SI 4a - An assessment of the Completion Record is being evaluated for this Safety Initiative. Completion dates for SI 41c have been missed.

4. Double-Shell Tank 241-SY-101 Waste Level Increase

Tank 241-SY-101 exhibited gas release events due to generation and retention of flammable gas. Waste level was used as an indirect measure of retained gas inventory. A mixer pump was installed in the tank in July 1993, which circulates liquid wastes from the tanks upper layer down to the bottom where jet nozzles discharge the fluid about two feet from the bottom. This prevents gas bubbles from building up at the bottom, and results in venting of small steady gas releases, rather than in large infrequent gas releases. Since early 1997, the surface level has been rising in spite of regular mixer pump operations.

Several void fraction instrument (VFI) readings have been completed which gives the void fraction at depth in the riser through which it is deployed. The VFI readings indicate that the level increase is due to gas trapped in the crust, which comprises the upper approximately 60 inches of waste. The results of the core sampling (of both retained gas sampling and regular cores) and the VFI results, are in agreement.

Resolution Status: On February 11, 1998, the PRC recommended that the DOE-RL declare an Unreviewed Safety Question (USQ) over the continued level growth observed in this tank. DOE has modified the 406-inch and 422-inch mixer pump operational controls to allow additional mixer pump and characterization operations. Tank Farms has implemented TWO Standing Order 99-01 to reflect the relaxation of mixer pump operating controls at 406 and 422 inches. The contractor has established a multi-disciplinary team to solve the level growth issues in SY-101. The prime near-term focus is to transfer approximately 100,000 gallons out of SY-101. The schedule is presently 1st Quarter FY00.

A Mechanical Mitigation Arm (MMA), designed to disrupt the crust and allow gasses to escape from the tank liquid, was successfully deployed twice during May 1999. The MMA deployment resulted in an expected controlled increase in gas release. During May 1999, the rate of surface level increase slowed to the point that no increase in level was observed. Gas release rates were approximately equal to gas generation rate. Design and fabrication of transfer equipment continues.

5. Characterization Progress Status (See Appendix J)

Characterization is the understanding of the Hanford tank waste chemical, physical, and radiological properties to the extent necessary to ensure safe storage and interim operation, and ultimate disposition of the waste.

Safety Screening sampling for the month of May 1999 consisted of finishing up sampling of TX-118 and analytical work on the TX-113 sample. No new tanks have had their analyses completed and subsequent closure of the Safety Screening issue this month.

6. Standard Hydrogen Monitoring System (SHMS)

All of the tanks scheduled for grab sampling in May 1999 were sampled. April's tanks were also sampled according to the sampling schedule; however, their shipment to PNNL was delayed. Both April and May grab sample values are listed below with corresponding SHMS readings at or near the same time as the grab sample.

Tank Number	Grab Hydrogen (ppm)	SHMS Hydrogen (ppm)	Grab N_2O (ppm)	Grab H_2/N_20
AN-103	<10	0	<10	NA
AN-107	26	130	70	0.37
SY-103 (April)	10	30	10	1.00
AZ-101	40	80	<10	NA
AZ-102	50	180	<10	NA
SY-103(May)	25	0	11	2.27
AY-102*	30	50	<10	NA

All values seem to correlate well between the two measurement systems. The variance between measurements for AN-107 and AZ-102 appear to show disparity, but at this low level (<500 ppm) it is difficult to discriminate between the readings and noise. The AY-102 (*) sample was pulled as part of the C-106 sluicing project.

7. Gas Release Events

Gas release events in May 1999.

Tank Number	Start Date	Peak Date	End Date	Initial Hydrogen (ppm)	Peak Hydrogen (ppm)	Vent Flow Rate (cfm)	Volume Hydrogen Released (cf)
A-101	4/30	5/3	5/7	212	755	10.2	21.7
A-101	5/23	5/25	5/26	196	305	9.21	1.74
AN-104	5/31	6/1	6/3	2	151	33.1	10.2
AN-105	5/2	5/2	5/3	52	182	39.1	4.90
C-106**	4/30	4/30	5/2	22	303	123	17.2
C-106**	5/24	5/24	5/25	17	310	214	32.0
S-111	5/2	5/4	5/16	180	460	3.82	7.94
SY-103	5/29	5/30	6/2	500	950	12.8	11.6
U-102	5/2	5/3	5/6	540	760	7.35	1.58
U-103	5/1	5/4	5/8	450	930	6.22	10.7
U-105***	5/1	5/3	5/7	680	920	3.05	3.02
U-108	5/1	5/3	5/13	590	1080****	2.05	5.79
U-108	5/17	5/17	5/25	580	890	1.81	2.97
U-109	5/2	5/4	5/12	420	810	2.34	5.98

****C-106 releases are coincidental with sluicing activities.**
*****U-105 releases were calculated using Whittaker Cell data because the gas chromatograph was inoperable during the specified time period.**
******This peak for U-108 exceeds the 1000 ppm notification limit.**

8. PMHC-TANKFARM-1999-0017, Off-Normal Occurrence Report, "Cross-Site Transfer of tank 241-SY-102 to 241-AP-107 Was Halted Due to Spurious Level Detector Alarms at 6241-A," Final Update April 26, 1999

On March 12, 1999, at 2213 the cross-site transfer of tank 241-SY-102 to 241-AP-107 was halted. One of two sump level detectors in the 6241-A diversion box would spuriously alarm. This alarm would cause the transfer to be shut down.

The diversion box sump was verified empty using a camera. Due to the demonstrated unreliability of the sump level alarm the transfer process was shut down until the leak detector can be repaired and tested. A Limiting Condition for Operations 3.3.3 was entered and the transfer shutdown was verified. An administrative lock was placed on the transfer pump. It was verified that there was no leak present in diversion box 6241-A.

No further evaluation is required.

9. PMHC-TANKFARM-1998-0156, Off-Normal Occurrence Report, "Potential Inadequacy of Authorization Basis (USQ)," Latest Update April 15, 1999

On December 31, 1998, the Plant Review Committee (PRC) concluded that a Potential Inadequacy in the Authorization Basis (PIAB) exists.

The Unreviewed Safety Question (USQ) screening results indicate drainage volume from some transfer routes could potentially exceed the assumptions used in the Basis for Interim Operation (BIO) on the volume of liquid that could drain from a pipe in the event of a leak.

Immediate Actions: (1) Stop all waste transfers, (2) Standing Order TWO-99-005 was issued, which describes actions and approvals necessary prior to performing each transfer.

This Occurrence Report is extended pending the results of the PRC evaluation of Unreviewed Safety Question Determination for Unreviewed Safety Question No. TF-99-0017 and Unreviewed Safety Question No. TF-98-1237.

A final report is expected to be issued by December 31, 1999.

10. PHMC-TANKFARM-1998-0124, Off-Normal Occurrence Report, "Liquid Observation Well (LOW) Readings in SST 241-B-111 Indicate a Potential Drop in Interstitial Liquid Level (ILL)," **Latest Update May 13, 1999.**

On September 29, 1998, LOW readings, used to help determine and monitor tank ILLs were in excess of –3 standard deviations from the baseline established for this tank, indicating a liquid level drop of approximately 1.2 inches.

On October 20, 1998, the Plant Review Committee (PRC) recommended:

1) Place the tank on the alert list and continue normal monitoring with increased surveillance and:
   a) if level growth above 2-sigma deviations after 21 days is experienced, file a discrepancy report
   b) if the level trend is downward (2-sigma deviation), file a discrepancy report
   Report data for PRC review and recommendations.

On January 27, 1999, the PRC met and reviewed the data collected since the occurrence report notification date (October 10, 1998). The PRC determined that the data remained inconclusive.

Continuing actions will be to monitor tank B-111 levels closely, and evaluate data collected.

Note: In May 1999, the additional data on B-111 was combined with the previous information and a re-*evaluation of the lead assessment was initiated. Preliminary results that the tank is not leaking were*

presented to the PRC on May 19, 1999. The PRC concurred with the preliminary results and requested that the assessment be finalized.

11. PHMC-TANKFARM-1999-0023, "Additional Informatiôn Regarding Crust Growth in 241-SY-101," Off-Normal Occurrence Report, Notification Date April 9, 1999, **Latest Update May 13, 1999 (for typo correction only)**

Characterization of the crust material in SY-101 revealed substantial gas accumulation. If released, the gas could exceed 25% of the Lower Flammability Limit in the tank dome headspace. The level growth was reported in RL-PMHC-TANKFARM-1997-0106. The DOE-HQ Program Manager accepted that final report on June 12, 1998.

It is believed that some globally waste-disturbing activities could induce a gas release from the surface crust. Additional ignition source controls are being placed on the tank until operational controls are in place.

To prevent the possibility of global crust dissolution, waste-disturbing activities are prohibited with the exception of continued prescribed mixer pump operations.

Although the item was previously reported on RL-PMHC-TANKFARM-1997-0106, and no new phenomenon has been identified, LMHC Senior Management believed the occurrence reporting system would make additional information known across the DOE complex.

This report will remain open until the SY-101 crust growth is resolved. Resolution is expected in late CY1999.

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APPENDIX A

WASTE TANK SURVEILLANCE MONITORING TABLES

TABLE A-1. WATCH LIST TANKS

MAY 31, 1999

These tanks have been identified as Watch List Tanks in accordance with Public Law 101-510, Section 3137, "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," (1990). These tanks have been identified because they "... may have a serious potential for release of high-level waste due to uncontrolled increases in temperature or pressure."

Single-Shell Tanks

Tank No.	Watch List	Officially Added to Watch List
A-101	Hydrogen	1/91
AX-101	Hydrogen	1/91
AX-103	Hydrogen	1/91
C-102	Organics	5/94
C-103	Organics	1/91
C-106	High Heat	1/91
S-102	Hydrogen	1/91
S-111	Hydrogen	1/91
S-112	Hydrogen	1/91
SX-101	Hydrogen	1/91
SX-102	Hydrogen	1/91
SX-103	Hydrogen	1/91
SX-104	Hydrogen	1/91
SX-105	Hydrogen	1/91
SX-106	Hydrogen	1/91
SX-109	Hydrogen because other tanks vent thru it	1/91
T-110	Hydrogen	1/91
U-103	Hydrogen	1/91
U-105	Hydrogen	1/91
U-107	Hydrogen	12/93
U-108	Hydrogen	1/91
U-109	Hydrogen	1/91
22 Tanks		

Double-Shell Tanks

Tank No.	Watch List	Officially Added to Watch List
AN-103	Hydrogen	1/91
AN-104	Hydrogen	1/91
AN-105	Hydrogen	1/91
AW-101	Hydrogen	6/93
SY-101	Hydrogen	1/91
SY-103	Hydrogen	1/91
6 Tanks		

TANKS BY WATCH LIST

Hydrogen

A-101
AX-101
AX-103
S-102
S-111
S-112
SX-101
SX-102
SX-103
SX-104
SX-105
SX-106
SX-109
T-110
U-103
U-105
U-107
U-108
U-109
AN-103
AN-104
AN-105
AW-101
SY-101
SY-103
25 Tanks

Organics

C-102
C-103
2 Tanks

High Heat

C-106
1 Tank

22 Single-Shell tanks
6 Double-Shell tanks
28 Tanks on Watch Lists

All tanks were removed from the Ferrocyanide and 18 tanks from Organics Watch Lists; see Table A-2.

TABLE A-2. ADDITIONS/DELETIONS TO WATCH LISTS BY YEAR

May 31, 1999

Added/Deleted dates may differ from dates that tanks were officially added to the Watch Lists. (See Table A-1).

	Ferrocyanide		Hydrogen		Organics		High Heat	Total Tanks (1) SST	DST	Total
1/91 Original List - Response to Public Law 101-5	23		23		8		1	47	5	52
Added 2/91 (revision to Original List)	1	T-107						1		1
Total - December 31, 1991	24		23		8		1	48	5	53
Added 8/92			1	AW-101					1	1
Total - December 31, 1992	24		24		8		1	48	6	54
Added 3/93					1	U-111		1		
Deleted 7/93	-4	(BX-110) (BX-111) (BY-101) (T-101)						-4		
Added 12/93			1	(U-107)				0		
Total - December 31, 1993	20		25		9		1	45	6	51
Added 2/94					1	T-111		1		
Added 5/94					10	A-101 AX-102 C-102 S-111 SX-103 TY-104 U-103 U-105 U-203 U-204		4		
Deleted 11/94	-2	(BX-102) (BX-106)						-2		
Total - December 1994 thru December 1995	18		25		20		1	48	6	54
Deleted 6/96	-4	(C-108) (C-109) (C-111) (C-112)						-4		
Deleted 9/96	-14	(BY-103) (BY-104) (BY-105) (BY-106) (BY-107) (BY-108) (BY-110) (BY-111) (BY-112) (T-107) (TX-118) (TY-101) (TY-103) (TY-104)						-10		
Deleted 12/98					18	(A-101) (AX-102) (B-103) (S-102) (S-111) (SX-103) (SX-106) (T-111) (TX-105) (TX-118) (TY-104) (U-103) (U-105) (U-106) (U-107) (U-111) (U-203) (U-204)		-12		
Total - December 1998 thru May 1999	0		25		2		1	22	6	28

(1) Eighteen of the 20 tanks were removed from the Organics Watch List in December 1998; eight of the tanks removed from the Organics List are also on the Hydrogen Watch List; therefore, the total tanks added/deleted depends upon whether a tank is also on another list.

See table A-1 for current Watch List Tanks.

TABLE A-3. TEMPERATURE MONITORING IN WATCH LIST TANKS (Sheet 1 of 2)

May 31, 1999

All Watch List tanks are reviewed for increasing temperature trends. Temperatures in these tanks are monitored by the Tank Monitor And Control System (TMACS), unless indicated otherwise.

Temperatures are taken in the waste unless in-waste thermocouples are out of service. Temperatures below are the highest temperatures recorded in these tanks during this month, and do not exceed the maximum criteria limit for this month.

Temperatures in Degrees F.

Total Waste in Inches

(Total waste in inches is calculated from Inventory tables and size of tank, not surface level readings)

Hydrogen (Flammable Gas)			Organics		
Tank No.	Temp.	Total Waste (inches)	Tank No.	Temp	Total Waste (Inches)
A-101	148	347	C-102	81	149
AX-101	129	272	C-103	112	66
AX-103	107	40	2 Tanks		
S-102	104	207			
S-111	89	224			
S-112	83	239			
SX-101	132	171			
SX-102	141	203	Tank No.		
SX-103	160	243	C-106 (2)	214	52
SX-104	144	217	1 Tank		
SX-105	166	254			
SX-106	104	179	(Sluicing began November 18,		
SX-109 (1)	137	96	1998, in tank C-106)		
T-110	63	123			
U-103	85	166			
U-105	88	147			
U-107	78	143			
U-108	87	166			
U-109	83	164			
AN-103	106	348			
AN-104	106	384			
AN-105	104	410			
AW-101	98	410			
SY-101	126	405			
SY-103	95	270			
25 Tanks					

18 tanks have been removed from the Organics Watch List. See Table A-2 for list and dates.

22 Single-Shell Tanks and 6 Double-Shell Tanks remain on the Watch List

TABLE A-3. TEMPERATURE MONITORING IN WATCH LIST TANKS
(sheet 2 of 2)

Notes:

Unreviewed Safety Question(USQ):
When a USQ is declared, special controls are required, and work in the tanks is limited. There are currently no USQs on single-shell tanks. There is a USQ on double-shell tank SY-101 for liquid level increase.

Hydrogen/Flammable Gas:
These tanks are suspected of having a significant potential for hydrogen/flammable gas generation, entrapment, and episodic release. The USQ associated with these tanks was closed in September 1998. Twenty-five tanks (19 SST and 6 DST) remain on the Hydrogen Watch List.

Organic Salts:
These tanks contain concentrations of organic salts ≥3 weight% of total organic carbon (TOC)(equivalent to 10 wt% sodium acetate). The USQ associated with these tanks was closed in October 1998, and 18 organic complexant tanks were removed from the Organic Watch List in December 1998. Two organic solvent tanks (C-102 and C-103) remain on the Organic Watch List.

High Heat:
These tanks contain heat generating strontium-rich sludge and require drainable liquid to be maintained in the tank to promote cooling. Only tank C-106 is on the High Heat Watch List because in the event of a leak, without water additions the tank could exceed temperature limits resulting in unacceptable structural damage. The tank is cooled through evaporation in conjunction with active ventilation. Water is periodically added as evaporation takes place. There is no USQ associated with tank C-106. Sluicing (sludge removal) was initiated in November 1998.

Active ventilation:
There are 15 single-shell tanks on active ventilation (eight are on the Watch List as indicated by an asterisk):

C-105	SX-107
C-106 *	SX-108
SX-101 *	SX-109 *
SX-102 *	SX-110
SX-103 *	SX-111
SX-104 *	SX-112
SX-105 *	SX-114
SX-106 *	

Note: A-104, 105 and 106 exhauster has been out of service since 1991 and is no longer considered actively ventilated. Although C-104 has a cascade line with C-105, it is not considered to be actively ventilated.

Footnotes:

(1) Tank SX-109 has the potential for flammable gas accumulation only because other SX tanks vent through it.

(2) Tank C-106 is on the Watch List because in the event of a leak without water additions the tank could have exceeded temperature limits resulting in unacceptable structural damage. However, sluicing began November 18, 1998, and currently, water additions are not required.

TABLE A-4. TEMPERATURE MONITORING IN NON-WATCH LIST TANKS

May 31, 1999

SINGLE-SHELL TANKS WITH HIGH HEAT LOADS (>26,000 Btu/hr)

Nine tanks have high heat loads for which temperature surveillance requirements are established by HNF-SD-WM-TSR-006, Rev 0-D, *Tank Waste Remediation System Technical Safety Requirements*, Stickney, 1997. Only one of these tanks (241-C-106) is on the High Heat Watch List. In an analysis, WHC-SD-WM-SARR-010, Rev 1, *Heat Removal Characteristics of Waste Storage Tanks*, Kummerer, 1995, it was estimated that nine tanks have heat sources >26,000 Btu/hr, which is the new parameter for determining high heat load tanks. See also document HNF-SD-WM-BIO-001, Rev 1, *Tank Waste Remediation System Basis for Interim Operation*, Noorani, 1998.

Temperatures in these tanks did not exceed TSR requirements for this month, and are monitored by the Tank Monitor and Control System (TMACS). All high heat load tanks are on active ventilation.

Tank No.	Temperature (F.)		Total Waste In Inches
C-106	214	(Riser 14)	72
	154	(Riser 8)	72
SX-103	160		242
SX-107	163		43
SX-108	181		37
SX-109	137		96
SX-110	159		28
SX-111	181		51
SX-112	145		39
SX-114	175		71
9 Tanks			

(Total Waste In Inches is calculated from inventory table and tank size, not surface level readings)

Notes:
(1) C-106 is on the High Heat Load Watch List. Sluicing began November 18, 1998.
(2) Tanks A-104 and A-105 were deleted from the high heat load list, and SX-103 was added, per the documents above.

SINGLE SHELL TANKS WITH LOW HEAT LOADS (<26,000 Btu/hr)

There are 119 low heat load non-watch list tanks. Temperatures in tanks connected to TMACS are monitored by TMACS; temperatures in those tanks not yet connected to TMACS are manually taken semiannually in January and July. Temperatures obtained were within historical ranges for the applicable tank.

No temperatures have been obtained for several years in the tanks listed below. Most of these tanks have no thermocouple tree.

Tank No.	Tank No.
BX-104	TX-101
BY-102	TX-110
BY-109	TX-114
C-204	TX-116
SX-115	TX-117
T-102	U-104
T-105	

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 1 of 6)

May 31, 1999

The following table indicates whether Single-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month:

NOTE:

All Watch List and High Heat tank temperature monitoring is in compliance. (4)

All Dome Elevation Survey monitoring is in compliance.

All Psychrometrics monitoring is in compliance (2).

Drywell monitoring no longer required (9).

In-tank photos/videos are taken "as needed" (3)

LEGEND:	
(Shaded)	= in compliance with all applicable documentation
N/C	= noncompliance with applicable documentation
O/S	= Out of Service
Neutron	= LOW readings taken by Neutron probe
POP	= Plant Operating Procedure, TO-040-650
MT/FIC/ ENRAF	= Surface level measurement devices
OSD	= Operating Specifications Doc., OSD-T-151-00013, -00031
N/A	= Not applicable (not monitored, or no monitoring schedule)
None	= Applicable equipment not installed

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7)
	Watch List	High Heat			MT	FIC	ENRAF	Neutron
A-101	X			LOW	None	None		
A-102				None	None		None	None
A-103				LOW	None	None		
A-104		X		None	None	None		None
A-105		X		None		None	None	None
A-106				None	None	None		None
AX-101	X			LOW	None	None		(10)
AX-102				None	None	None		None
AX-103	X			None	None	None		None
AX-104				None	None	None		None
B-101				None	None		None	None
B-102				ENRAF	None	None		None
B-103				None	None		None	O/S
B-104				LOW		None	None	
B-105				LOW		None	None	
B-106				FIC	None		None	None
B-107				None		None	None	None
B-108				None	None		None	None
B-109				None		None	None	None
B-110				LOW	O/S	None	None	
B-111				LOW	None		None	
B-112				ENRAF	None	None		None
B-201				MT		None	None	None
B-202				MT		None	None	None
B-203				MT		None	None	None
B-204				MT		None	None	None
BX-101				ENRAF	None	None		None
BX-102				None	None	None		None
BX-103				ENRAF	None	None		None
BX-104			None	ENRAF	None	None		None
BX-105				None	None	None		None
BX-106				ENRAF	None	None		None
BX-107				ENRAF	None	None		None

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 2 of 6)

Tank Number	Tank Category: Watch List	Tank Category: High Heat	Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD): MT	Surface Level Readings (1) (OSD): FIC	Surface Level Readings (1) (OSD): ENRAF	LOW Readings (OSD)(5,7): Neutron
BX-108				None	None	None		None
BX-109				None	None	None		None
BX-110				None	None	None		None
BX-111				LOW	None	None		
BX-112				ENRAF	None	None		None
BY-101				LOW		None	None	
BY-102			None	LOW	O/S	None	None	
BY-103				LOW	None	None		
BY-104				LOW	O/S	None	None	
BY-105				LOW		None	None	
BY-106				LOW		None	None	
BY-107				LOW		None	None	
BY-108				None		None	None	None
BY-109			None	LOW	None	O/S	None	
BY-110				LOW	None	None		
BY-111				LOW	None	None		
BY-112				LOW		None	None	
C-101				None		None	None	None
C-102				None	None		None	None
C-103				ENRAF	None	None		None
C-104				None	None	None		None
C-105				None	None	None		None
C-106 (3)	X	X		ENRAF	None	None		None
C-107				ENRAF	None	None		None
C-108				None		None	None	None
C-109				None		None	None	None
C-110				MT		None	None	None
C-111				None		None	None	None
C-112				None	None	None		None
C-201				None		None	None	None
C-202				None		None	None	None
C-203				None		None	None	None
C-204			None	None		None	None	None
S-101				ENRAF	None	None		
S-102	X			ENRAF	None	None		
S-103				ENRAF	None	None		
S-104				LOW	None	None		
S-105				LOW	None	None		
S-106				ENRAF	None	None		
S-107				ENRAF	None	None		None
S-108				LOW	None	None		
S-109				LOW	None	None		
S-110				LOW	None	None		
S-111	X			ENRAF	None	None		
S-112	X			LOW	None	None		
SX-101	X			LOW	None	None		
SX-102	X			LOW	None	None		
SX-103	X			LOW	None	None	(11)	
SX-104	X			LOW	None	None		
SX-105	X			LOW	None	None		
SX-106	X			ENRAF	None	None		
SX-107		X		None		None	None	None
SX-108		X		None		None	None	None

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 3 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7)
	Watch List	High Heat			MT	FIC	ENRAF	Neutron
SX-109 (3)	X	X		None	None	None		None
SX-110		X		None		None	None	None
SX-111		X		None		None	None	None
SX-112		X		None		None	None	None
SX-113				None		None	None	None
SX-114		X		None		None	None	None
SX-115			None	None		None	None	None
T-101				None	None	None		None
T-102			None	ENRAF	None	None		None
T-103				None	None	None		None
T-104				LOW	None	None		
T-105			None	None	None	None		None
T-106				None	None	None		None
T-107				ENRAF	None	None		None
T-108				ENRAF	None	None		None
T-109				None	None	None		None
T-110	X			LOW	None	None		
T-111				LOW	None	None		
T-112				ENRAF	None	None		None
T-201				MT		None	None	None
T-202				MT		None	None	None
T-203				None		None	None	None
T-204				MT		None	None	None
TX-101			None	ENRAF	None	None		None
TX-102				LOW	None	None		
TX-103				None	None	None		None
TX-104				None	None	None		None
TX-105				None	None	None		None (7)
TX-106				LOW	None	None		
TX-107				None	None	None		None
TX-108				None	None	None		None
TX-109				LOW	None	None		
TX-110			None	LOW	None	None		
TX-111				LOW	None	None		
TX-112				LOW	None	None		
TX-113				LOW	None	None	(13)	
TX-114			None	LOW	None	None		
TX-115				LOW	None	None		
TX-116			None	None	None	None		None
TX-117			None	LOW	None	None		
TX-118				LOW	None	None		
TY-101				None	None	None		None
TY-102				ENRAF	None	None		None
TY-103				LOW	None	None		
TY-104				ENRAF	None	None		None
TY-105				None	None	None		None
TY-106				None	None	None		None
U-101				MT		None	None	None
U-102				LOW	None	None		
U-103	X			ENRAF	None	None		
U-104			None	None		None	None	None
U-105	X			ENRAF	None	None		
U-106				ENRAF	None	None		

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 4 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7)
	Watch List	High Heat			MT	FIC	ENRAF	Neutron
U-107	X			ENRAF	None	None		
U-108	X			LOW	None	None		
U-109	X			ENRAF	None	None		
U-110				None	None	None		None
U-111				LOW	None	None		
U-112				None		None	None	None
U-201				MT		None	None	None
U-202				MT		None	None	None
U-203				None	None	None		None
U-204				ENRAF	None	None		None
Catch Tanks and Special Surveillance Facilities								
A-302-A	N/A	N/A	N/A	(6)	None	None		None
A-302-B	N/A	N/A	N/A	(6)		None	None	None
ER-311	N/A	N/A	N/A	(6)	None		None	None
AX-152	N/A	N/A	N/A	(6)		None	None	None
AZ-151	N/A	N/A	N/A	(6)	None		None	None
AZ-154	N/A	N/A	N/A	(6)		None	None	None
BX-TK/SMP	N/A	N/A	N/A	(6)		None	None	None
A-244 TK/SMP	N/A	N/A	N/A	(6)	None	None	None	None
AR-204	N/A	N/A	N/A	(6)			None	None
A-417	N/A	N/A	N/A	(6)	None	None	None	None
A-350	N/A	N/A	N/A	(6)	None	None	None	None
CR-003	N/A	N/A	N/A	(6)	None	None	None	None
Vent Sta.	N/A	N/A	N/A	(6)		None	None	None
S-302	N/A	N/A	N/A	(6)	None	None		None
S-302-A	N/A	N/A	N/A	(6)	None		None	None
S-304	N/A	N/A	N/A	(6)	None	None		None
TX-302-B	N/A	N/A	N/A	(6)		None	None	None
TX-302-C	N/A	N/A	N/A	(6)	None	None		None
U-301-B	N/A	N/A	N/A	(6)	None	None		None
UX-302-A	N/A	N/A	N/A	(6)	None	None		None
S-141	N/A	N/A	N/A	(6)	O/S (12)	None	None	None
S-142	N/A	N/A	N/A	(6)	O/S (12)	None	None	None
Totals: 149 tanks	20 Watch List Tanks (4)	10 High Heat Tanks (4)	N/C: 0		N/C: 0	N/C: 0	N/C: 0	N/C: 0

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS -149 TANKS
(Sheet 5 of 6)

Footnotes:

1. All SSTs have either manual tape, FIC, or ENRAF surface level measuring devices. Some also have zip cords.

   ENRAF gauges are being installed to replace FICs (or sometimes manual tapes). The ENRAF gauges are being connected to TMACS, but many are currently being read manually from the field. See Table A-7 for list of ENRAF installations.

2. High heat tanks have active exhausters; psychrometrics can be taken in the high heat tanks. Psychrometric readings are taken on an "as needed" basis with the exception of tanks C-105 and C-106. Hanford Federal Facility Agreement and Consent Order," Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy," Fourth Amendment 1994 (Tri-Party Agreement) requires psychrometric readings to be taken in C-105 and C-106 on a monthly frequency. Tank C-105 exhauster was shut down for C-106 sluicing; but was back on line during parts of December and psychrometrics were performed on C-105 and C-106. Also, SX-farm now has psychrometrics taken monthly.

3. C-106 is the only tank on the high heat load list included on the High Heat Watch List.

4. Temperature readings may be regulated by OSD or POP. Temperatures cannot be obtained in 13 low heat load tanks (see Table A-4). The OSD does not require readings or repair of out-of service thermocouples for the low heat load (≤40,000 Btu/h) tanks. However, the POP requires that attempts are to be made semiannually in January and July to obtain readings for these tanks. There are no in-waste temperatures for tanks AX-102 and B-103. The waste level in this tanks is lower than the lowest thermocouple in these trees.

   Temperatures for many tanks are monitored continuously by TMACS; see Table A-8, TMACS Monitoring Status.

5. Document WHC-OSD-T-151-00031, "Operating Specifications for Tank Farm Leak Detection," Rev C-0, January 13, 1999, requires that single-shell tanks with the surface level measurement device contacting liquid, partial liquid, or floating crust surface, will be monitored for leak detection on a daily basis. Tanks with a solid surface will be monitored for leak detection on a weekly basis by taking neutron scan data from a Liquid Observation Well (LOW), if an LOW is present. Tanks with a solid surface but without LOWs will not be monitored for leak detection if the tank has been interim stabilized, until an LOW is installed. This latest OSD revision does not require drywell surveys to be taken. (Drywell scans are being taken around C-106, as required by the Waste Retrieval Sluicing System, Spectral Gamma Waste Management). The OSD specifies what leak detection methods are to be used for each tank, and the requirements if the readings are not taken on the required frequency or if equipment is out of service.

6. Leak detection for the catch tanks is performed by monitoring for the buildup of liquid in the secondary containment (for most tanks with secondary containment) or for decrease in the liquid level for those tanks without secondary containment or secondary containment monitoring.

   Catch tanks 240-S-302 and 241-S-302-A are monitored for intrusions only, and are not subject to leak detection monitoring requirements until liquid is present above the intrusion level.

   Weight Time Factor is the surface level measuring device currently used in A-417, A-350 and 244-A-Tank/Sump. DCRT CR-003 is inactive and measured in gallons.

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 149 TANKS (Sheet 6 of 6)

7. Document WHC-SD-WM-TI-605, REV. 0, dated January 1994, describes the rationale for Liquid Observation Well (LOW) installation priority. This priority is based on tank leak status, tank surface condition, and tank stabilization status. Also included is a listing of tanks with the waste level being below two feet which have no priority assigned because no effort will be made to install LOWs in the near future. LOW probes are unable to accurately monitor interstitial liquid levels less than two feet high.

   Tanks which will not receive LOWs:

A-102	BX-101	C-201	T-106
A-104	BX-103	C-202	T-108
A-105	BX-105	C-203	T-109
AX-102	BX-106	C-204	TX-107
AX-104	BX-108	SX-110	TY-102
B-102	C-108	SX-113	TY-104
B-103	C-109	SX-115	TY-106
B-112	C-111	T-102	U-101
		T-103	U-112

   Total - 34 Tanks

8. TX-105 - the LOW was in riser 8; the riser has been removed and the LOW has not been monitored since January 1987. Liquid levels are being taken in riser 9 by ENRAF and recorded in TMACS.

9. OSD-T-151-00031, Rev. C-0, dated January 13, 1999, does not require drywell scans to be taken. Drywell scans are currently being taken around C-106 as a requirement of the Waste Retrieval Sluicing System, Spectral Gamma Waste Management.

10. AX-101 - LOW readings are taken by gamma sensors.

11. SX-103 - ENRAF displacer sticks to waste surface, giving erratic readings. **Scheduled to be flushed again and rebaselined. LOW is primary device and maintaining steady level.**

12. Catch Tanks S-141 and S-142 have no M.T. readings.

13. TX-113 – ENRAF - **waste surface is highly irregular, causing the gauge to settle at different elevations every time it is moved. The ENRAF is not used as a primary leak detection device, and the fluctuations observed are considered normal for this tank. The baseline of 198.50 inches and tolerances should absorb most of the normal fluctuation for this gauge's irregular readings.**

TABLE A-6. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS

28 TANKS (Sheet 1 of 2)

May 31, 1999

The following table indicates whether Double-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month.

NOTE:

Dome Elevation Surveys are not required for DSTs.

Psychrometrics and in-tank photos/videos are taken "as needed" (2)

LEGEND:	
(Shaded)	= In compliance with all applicable documentation
N/C	= Noncompliance with applicable documentation
FIC/ENRAF M.T.	= Surface level measurement devices
OSD	= OSD-T-151-0007, OSD-T-151-0031
None	= no M.T., FIC or ENRAF installed
O/S	= Out of Service
W.F.	= Weight Factor
Rad.	= Radiation

Tank Number	Watch List	Temperature Readings (3) (OSD)	Surface Level Readings (1) (OSD)			Radiation Readings: Leak Detection Pits (4) (OSD)		Radiation Readings: Annulus (OSD)
			M.T.	FIC	ENRAF	W.F.	Rad. (8)	
AN-101				None			(8)	
AN-102					None		(8)	
AN-103	X			None			(8)	
AN-104	X		O/S	None			(8)	
AN-105	X		O/S	None			(8)	
AN-106					None		(8)	
AN-107					None	O/S	(8)	
AP-101			O/S		None	O/S (9)	(8)	
AP-102					None	O/S (9)	(8)	
AP-103					None	O/S (9)	(8)	
AP-104			O/S		None	O/S (9)	(8)	
AP-105					None	O/S (9)	(8)	
AP-106					None	O/S (9)	(8)	
AP-107					None	O/S (9)	(8)	
AP-108					None	O/S (9)	(8)	
AW-101	X		O/S	None			(8)	
AW-102					(6)		(8)	
AW-103				None			(8)	
AW-104				None			(8)	
AW-105				None			(8)	
AW-106				None			(8)	
AY-101				None		O/S	(8)	(5)
AY-102				None			(8)	
AZ-101				None			(8)	(5)
AZ-102					None		(8)	(5)
SY-101	X		O/S (10)	None		(7)	(8)	
SY-102			O/S (10)	None			(8)	
SY-103	X		O/S (10)	None		(7)	(8)	
Totals: 28 tanks	6 Watch List Tanks	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0

TABLE A-6. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 28 TANKS
(Sheet 2 of 2)

Footnotes:

1. Some double-shell tanks have both FIC and manual tape which is used when the FIC is out of service. Noncompliance (N/C) will be shown when no readings are obtained. ENRAF gauges are being installed to replace FICs. The ENRAF gauges are being connected to TMACS, but some are currently being read manually.

2. Psychrometric readings are taken on an "as needed" basis. No psychrometric readings are currently being taken in the double-shell tanks.

3. OSD specifies double-shell tank temperature limits, gradients, etc.

4. Applicable OSD and HNF-IP-0842, latest revisions, are used as guidelines for monitoring Leak Detection Pits. See also (8) below.

5. AY-101 and AZ-101/102 are monitored only by the annulus Leak Detection Probe Measurement device.

6. AW-102 has ENRAF, FIC and M.T. At some point the FIC will be removed.

7. **SY-101- Leak Detection Pit - CWF reading is currently above normal range of 24 inches.**
   SY-103 - Leak Detection Pit - CWF reading is currently above normal range of 24 inches.

8. USQ TF-97-0038, dated April 28, 1997, specifies discontinuing the use of leak detection pit radiation monitoring equipment in all double-shell tank farms where the leak detection pits are used as tertiary leak detection. This applies to all double-shell tank farms.

9. Weekly readings are being obtained by Instrument Technicians in these tanks:
   AP-103C (for tanks AP-101 - 104)
   AP-105C (for tanks AP-105 - 108)

10. **SY-101 - M.T. is O/S, no longer being monitored**
    SY-102 and -103 M.T. have sporadic readings

TABLE A-7. ENRAF SURFACE LEVEL GAUGE INSTALLATION AND DATA INPUT METHODS

May 31, 1999

LEGEND

SACS = Surveillance Analysis Computer System
TMACS = Tank Monitor and Control System
Auto = Automatically entered into TMACS and electronically transmitted to SACS
Manual = Manually entered directly into SACS by surveillance personnel, from Field Data sheets

EAST AREA

Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method
A-101	09/95	Auto	B-201		
A-102			B-202		
A-103	07/96	Auto	B-203		
A-104	05/96	Manual	B-204		
A-105			BX-101	04/96	Auto
A-106	01/96	Auto	BX-102	06/96	Auto
AN-101	08/96	Auto	BX-103	04/96	Auto
AN-102			BX-104	05/96	Auto
AN-103	08/95	Auto	BX-105	03/96	Auto
AN-104	08/95	Auto	BX-106	07/94	Auto
AN-105	08/95	Auto	BX-107	06/96	Auto
AN-106			BX-108	05/96	Auto
AN-107			BX-109	08/95	Auto
AP-101			BX-110	06/96	Auto
AP-102			BX-111	05/96	Auto
AP-103			BX-112	03/96	Auto
AP-104			BY-101		
AP-105			BY-102		
AP-106			BY-103	12/96	Manual
AP-107			BY-104		
AP-108			BY-105		
AW-101	08/95	Auto	BY-106		
AW-102	05/96	Auto	BY-107		
AW-103	05/96	Auto	BY-108		
AW-104	01/96	Auto	BY-109		
AW-105	06/96	Auto	BY-110	2/97	Manual
AW-106	06/96	Auto	BY-111	2/97	Manual
AX-101	09/95	Auto	BY-112		
AX-102	09/98	Auto	C-101		
AX-103	09/95	Auto	C-102		
AX-104	10/96	Auto	C-103	08/94	Auto
AY-101	03/96	Auto	C-104	4/99	Manual
AY-102	01/98	Auto	C-105	05/96	Manual
AZ-101	08/96	Manual	C-106	02/96	Auto
AZ-102			C-107	04/95	Auto
B-101			C-108		
B-102	02/95	Manual	C-109		
B-103			C-110		
B-104			C-111		
B-105			C-112	03/96	Manual
B-106			C-201		
B-107			C-202		
B-108			C-203		
B-109			C-204		
B-110					
B-111					
B-112	03/95	Manual			
Total East Area: 43					

WEST AREA

Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method
S-101	02/95	Manual	TX-101	11/95	Auto
S-102	05/95	Auto	TX-102	05/96	Auto
S-103	05/94	Auto	TX-103	12/95	Auto
S-104	05/99	Auto	TX-104	03/96	Auto
S-105	07/95	Manual	TX-105	04/96	Auto
S-106	06/94	Auto	TX-106	04/96	Auto
S-107	06/94	Auto	TX-107	04/96	Auto
S-108	07/95	Manual	TX-108	04/96	Auto
S-109	08/95	Manual	TX-109	11/95	Auto
S-110	08/95	Manual	TX-110	05/96	Auto
S-111	08/94	Auto	TX-111	05/96	Auto
S-112	05/95	Auto	TX-112	05/96	Auto
SX-101	04/95	Auto	TX-113	05/96	Auto
SX-102	04/95	Auto	TX-114	05/96	Auto
SX-103	04/95	Auto	TX-115	05/96	Auto
SX-104	05/95	Auto	TX-116	05/96	Auto
SX-105	05/95	Auto	TX-117	06/96	Auto
SX-106	08/94	Auto	TX-118	03/96	Auto
SX-107			TY-101	07/95	Auto
SX-108			TY-102	09/95	Auto
SX-109	09/98	Auto	TY-103	09/95	Auto
SX-110			TY-104	06/95	Auto
SX-111			TY-105	12/95	Auto
SX-112			TY-106	12/95	Auto
SX-113			U-101		
SX-114			U-102	01/96	Manual
SX-115			U-103	07/94	Auto
SY-101	07/94	Auto	U-104		
SY-102	06/94	Manual	U-105	07/94	Auto
SY-103	07/94	Auto	U-106	08/94	Auto
T-101	05/95	Manual	U-107	08/94	Auto
T-102	06/94	Auto	U-108	05/95	Auto
T-103	07/95	Manual	U-109	07/94	Auto
T-104	12/95	Manual	U-110	01/96	Manual
T-105	07/95	Manual	U-111	01/96	Manual
T-106	07/95	Manual	U-112		
T-107	06/94	Auto	U-201		
T-108	10/95	Manual	U-202		
T-109	09/94	Manual	U-203	09/98	Manual
T-110	05/95	Auto	U-204	6/98	Manual
T-111	07/95	Manual			
T-112	09/95	Manual			
T-201					
T-202					
T-203					
T-204					
Total West Area: 70					

113 ENRAFs installed: 83 automatically entered into TMACS, 30 manually entered into SACS

TABLE A-8. TANK MONITOR AND CONTROL SYSTEM (TMACS)

May 31, 1999

Note: Indicated below are the number of tanks having at least one operating sensor monitored by TMACS.

Some tanks have more than one sensor: multiple sensors of the same type in a tank are not shown in the table (for example: 10 tanks in BY-Farm have at least one operating TC sensor and 3 tanks in BY Farm have at least one operating RTD sensor).

Acceptance Testing Completed: Sensors Automatically Monitored by TMACS

EAST AREA Tank Farm	Temperatures Thermocouple Tree (TC)	 Resistance Thermal Device (RTD)	ENRAF Level Gauge	Pressure (b)	Hydrogen (c)	Gas Sample Flow
A-Farm (6 Tanks)	1		3		1	1
AN-Farm (7 Tanks)	7		4	7	3	3
AP-Farm (8 Tanks)						
AW-Farm (6 Tanks)	6		6		1	1
AX-Farm (4 Tanks)	3		4		1	
AY-Farm (2 Tanks)			2			
AZ-Farm (2 Tanks)						
B-Farm (16 Tanks)	1					
BX-Farm (12 Tanks)	11		12			
BY-Farm (12 Tanks)	10	3				
C-Farm (16 Tanks)	15	1	3	1		
TOTAL EAST AREA (91 Tanks)	54	4	34	8	6	5
WEST AREA						
S-Farm (12 Tanks)	12		7	1	3	3
SX-Farm (15 Tanks)	14		7	1	7	7
SY-Farm (3 Tanks) (a)	3		2	1	2	2
T-Farm (16 Tanks)	14	1	3		1	1
TX-Farm (18 Tanks)	13		18			
TY-Farm (6 Tanks)	6	3	6			
U-Farm (16 Tanks)	15		6	4	6	6
TOTAL WEST AREA (86 Tanks)	77	4	49	7	19	19
TOTALS (177 Tanks)	131	8	83	15	25	24

(a) Tank SY-101 has 2 gas sample flow sensors plus 2 vent flow sensors, and 2 ENRAFs.
(b) Each tank two sensors (high and low range).
(c) Each tank has two sensors (high and low range).

APPENDIX B

DOUBLE SHELL TANK WASTE TYPE AND SPACE ALLOCATION

TABLE B-1. DOUBLE-SHELL TANK WASTE TYPE AND SPACE ALLOCATION

MAY 1999

DOUBLE-SHELL TANK INVENTORY BY WASTE TYPE	
Complexed Waste (AN-102, AN-106, AN-107, SY-101, SY-103, (AY-101 , AP-108 (DC))	3.75 Mgal
Concentrated Phosphate Waste (AP-102)	1.09 Mgal
Double-Shell Slurry and Slurry Feed (AN-103, AN-104, AN-105, AP-101, AW-101, AW-106)	4.40 Mgal
Aging Waste (NCAW) at 5M Na	1.23 Mgal
Dilute in Aging Tanks (AZ-101, AZ-102)	0.38 Mgal
Dilute Waste (1) (AN-101, AP-103, AP-105, AP-104, AP-106, AP-107, AW-102, AW-103, AW-104, AW-105, AY-102, SY-102)	4.39 Mgal
NCRW, PFP and DST Settled Solids (All DST's)	4.12 Mgal
Total Inventory=	**19.35 Mgal**

SPACE DESIGNATED FOR SPECIFIC USE	
Spare Tanks (1 Aging & 1 Non-Aging Waste Tank)	2.28 Mgal
Watch List Tank Space (AN-103, AN-104, AN-105, AW-101, SY-101, SY-103)	0.65 Mgal
Restricted Tank Space (AN-102, AN-107, AP-102, AZ-101, AZ-102	0.43 Mgal
Receiver/Operational Tank Space (AP-106, AP-108, AW-102, AW-106, SY-102)	3.55 Mgal
Total Specific Use Space (05/31/99)	6.90 Mgal

TOTAL DOUBLE-SHELL TANK SPACE	
24 Tanks at 1140 Kgal	27.36 Mgal
4 Tanks at 980 Kgal	3.92 Mgal
	31.28 Mgal
Total Available Space	**31.28 Mgal**
Double-Shell Tank Inventory	**19.354 Mgal**
Space Designated for Specific Use	**6.90 Mgal**
Remaining Unallocated Space	**5.03 Mgal**

WVPTOT

(1) Was reduced in volume by -0.00 Mgal this month (Evaporator WVR)

Note: Net change in total DST inventory since last month: +0.151 Mgal

Table B-2. Double Shell Tank Waste Inventory for May 1999

TANKS	INVENTORY	SOLIDS	TYPE	LEFT
AN-101=	159	33	DN	981
AN-102=	1060	89	CC	80
AN-103=	957	410	DSS	183
AN-104=	1052	449	DSSF	88
AN-105=	1128	489	DSSF	12
AN-106=	39	17	CC	1101
AN-107=	1044	247	CC	96
AP-101=	1114	0	DSSF	26
AP-102=	1093	0	CP	47
AP-103=	287	1	CC	853
AP-104=	24	0	DN	1116
AP-105=	767	89	DSSF	373
AP-106=	95	0	DN	1045
AP-107=	705	0	DN	435
AP-108=	107	0	DN	1033
AW-101=	1124	306	DSSF	16
AW-102=	1046	40	DN	94
AW-103=	510	348	NCRW	630
AW-104=	1118	231	DN	22
AW-105=	430	280	NCRW	710
AW-106=	317	228	CC	823
AY-101=	160	108	DC	820
AY-102=(*)	516	110	DN	464
AZ-101=	845	47	NCAW	135
AZ-102=	912	104	NCAW	68
SY-101=	1193	41	CC	-53
SY-102=	811	88	DN/PT	329
SY-103=	741	362	CC	399
TOTAL=	19354	4117		11926

NOTE: Solids Adjusted to Most Current Available Data
NOTE: All Volumes in Kilo-Gallons (Kgals)
(*) Preliminary volume, actual volume will be calculated after settling

TOTAL DST SPACE AVAILABLE	
NON-AGING =	27360
AGING =	3920
TOTAL=	31280

DST INVENTORY CHANGE	
04/99 TOTAL	19203
05/99 TOTAL	19354
INCREASE	151

WATCH LIST SPACE	
AN-103=	183
AN-104=	88
AN-105=	12
AW-101=	16
SY-101=	-53
SY-103=	399
TOTAL=	645

RESTRICTED SPACE	
AN-102=	80
AN-107=	96
AP-102=	47
AZ-101=	135
AZ-102=	68
TOTAL=	426

WASTE RECEIVER SPACE	
AP-106 (200E/DN)=	1045
AP-108 (200E/DN)=	1033
SY-102 (200W/DN)=	329
TOTAL=	2407

USABLE SPACE	
AN-101=	981
AN-106=	1101
AP-101=	26
AP-103=	853
AP-104=	1116
AP-105=	373
AP-107=	435
AW-102=	94
AW-103=	630
AW-104=	22
AW-105=	710
AW-106=	823
AY-101=	820
AY-102=	464
TOTAL=	8448
EVAP. OPERATIONS	-1140
SPARE SPACE	-2280
USABLE LEFT=	5028

USABLE SPACE CHANGE	
04/99 TOTAL SPACE	5034
05/99 TOTAL SPACE	5028
CHANGE=	-6

WASTE RECEIVER SPACE CHANGE	
04/99 TOTAL SPACE	2550
05/99 TOTAL SPACE	2407
CHANGE=	-143

Inventory Calculation by Waste Type:

COMPLEXED WASTE	
AN-102=	971 (CC)
AN-106=	22 (CC)
AN-107=	797 (CC)
AP-103=	286 (CC)
AW-106=	89 (CC)
AY-101=	52 (DC)
SY-101=	1152 (CC)
SY-103=	379 (CC)
TOTAL DC/CC=	3748
TOTAL SOLIDS=	1093

NCRW SOLIDS (PD)	
AW-103=	348
AW-105=	280
TOTAL=	628

PFP SOLIDS (PT)	
SY-102=	88
TOTAL=	88

CONCENTRATED PHOSPHATE (CP)	
102-AP=	1093
TOTAL=	1093

DILUTE WASTE (DN)	
AN-101=	126
AP-104=	24
AP-106=	95
AP-107=	705
AP-108=	107
AW-102=	1006
AW-103=	162
AW-104=	887
AW-105=	150
AY-102=	406
SY-102=	723
TOTAL DN=	4391
TOTAL SOLIDS=	414

NCAW (AGING WASTE) (@ 5M Na)	
AZ-101=	791
AZ-102=	434
TOTAL @ ~5M Na=	1225
TOTAL DN=	381
TOTAL SOLIDS=	151

DSS/DSSF	
AN-103=	547
AN-104=	603
AN-105=	639
AP-101=	1114
AP-105=	678
AW-101=	818
TOTAL DSS/DSSF=	4399
TOTAL SOLIDS=	1743

GRAND TOTALS	
NCRW SOLIDS=	628
DST SOLIDS=	3250
PFP SOLIDS=	88
AGING SOLIDS=	151
CC=	3696
DC=	52
CP=	1093
NCAW=	1606
DSS/DSSF=	4399
DILUTE=	4391
TOTAL=	19354

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Table B-2. Double Shell Tank Waste Inventory for May 31, 1999

TOTAL AVAILABLE SPACE AS OF MAY 31, 1999:			**11926 KGALS**
WATCH LIST TANK SPACE:	**TANK**	**WASTE TYPE**	**AVAILABLE SPACE**
Unusable DST Headspace - Due to Special Restrictions	AN-103	DSS	183 KGALS
Placed on the Tanks, as Stated in the "Wyden Bill"	AN-104	DSSF	88 KGALS
	AN-105	DSSF	12 KGALS
	AW-101	DSSF	16 KGALS
	SY-101	CC	-53 KGALS
	SY-103	CC	399 KGALS
		TOTAL=	**645 KGALS**
		AVAILABLE TANK SPACE=	11926 KGALS
		MINUS WATCH LIST SPACE=	-645 KGALS
TOTAL AVAILABLE SPACE AFTER WATCH LIST SPACE DEDUCTIONS=			**11281 KGALS**
RESTRICTED TANK SPACE:	**TANK**	**WASTE TYPE**	**AVAILABLE SPACE**
DST Headspace Available to Store Only Specific Waste Types			
	AN-102	CC	80 KGALS
	AN-107	CC	96 KGALS
	AP-102	CP	47 KGALS
	AZ-101	AW	135 KGALS
	AZ-102	AW	68 KGALS
		TOTAL=	**426 KGALS**
		AVAILABLE SPACE AFTER WATCH LIST DEDUCTIONS=	11281 KGALS
		MINUS RESTRICED SPACE=	-426 KGALS
TOTAL AVAILABLE SPACE AFTER RESTRICTED SPACE DEDUCTIONS=			**10855 KGALS**
USABLE/WASTE RECEIVER TANK SPACE:	**TANK**	**WASTE TYPE**	**AVAILABLE SPACE**
DST Headspace Available to Store Facility Generated	AN-101	DN	981 KGALS
and Evaporator Product Waste	AN-106	CC	1101 KGALS
	AP-101	DSSF	26 KGALS
	AP-103	CC	853 KGALS
	AP-104	DN	1116 KGALS
	AP-105	DSSF	373 KGALS
FACILITY WASTE RECEIVER TANK	AP-106	DN	1045 KGALS
	AP-107	DN	435 KGALS
FACILITY WASTE RECEIVER TANK	AP-108	DN	1033 KGALS
EVAPORATOR FEED TANK	AW-102	DN	94 KGALS
	AW-103	NCRW	630 KGALS
	AW-104	DN	22 KGALS
	AW-105	NCRW	710 KGALS
EVAPORATOR RECEIVER TANK	AW-106	CC	823 KGALS
	AY-101	DC	820 KGALS
	AY-102	DN	464 KGALS
FACILITY WASTE RECEIVER TANK	SY-102	DN	329 KGALS
		TOTAL AVAILABLE USABLE TANK SPACE=	**10855 KGALS**
EVAPORATOR OPERATIONAL TANK SPACE:			-1140 KGALS
SPARE TANK SPACE: ***(DOE Order 5820.2A)***			-2280 KGALS
TOTAL TANK SPACE AVAILABLE AFTER ALL DEDUCTIONS=			**7435 KGALS**

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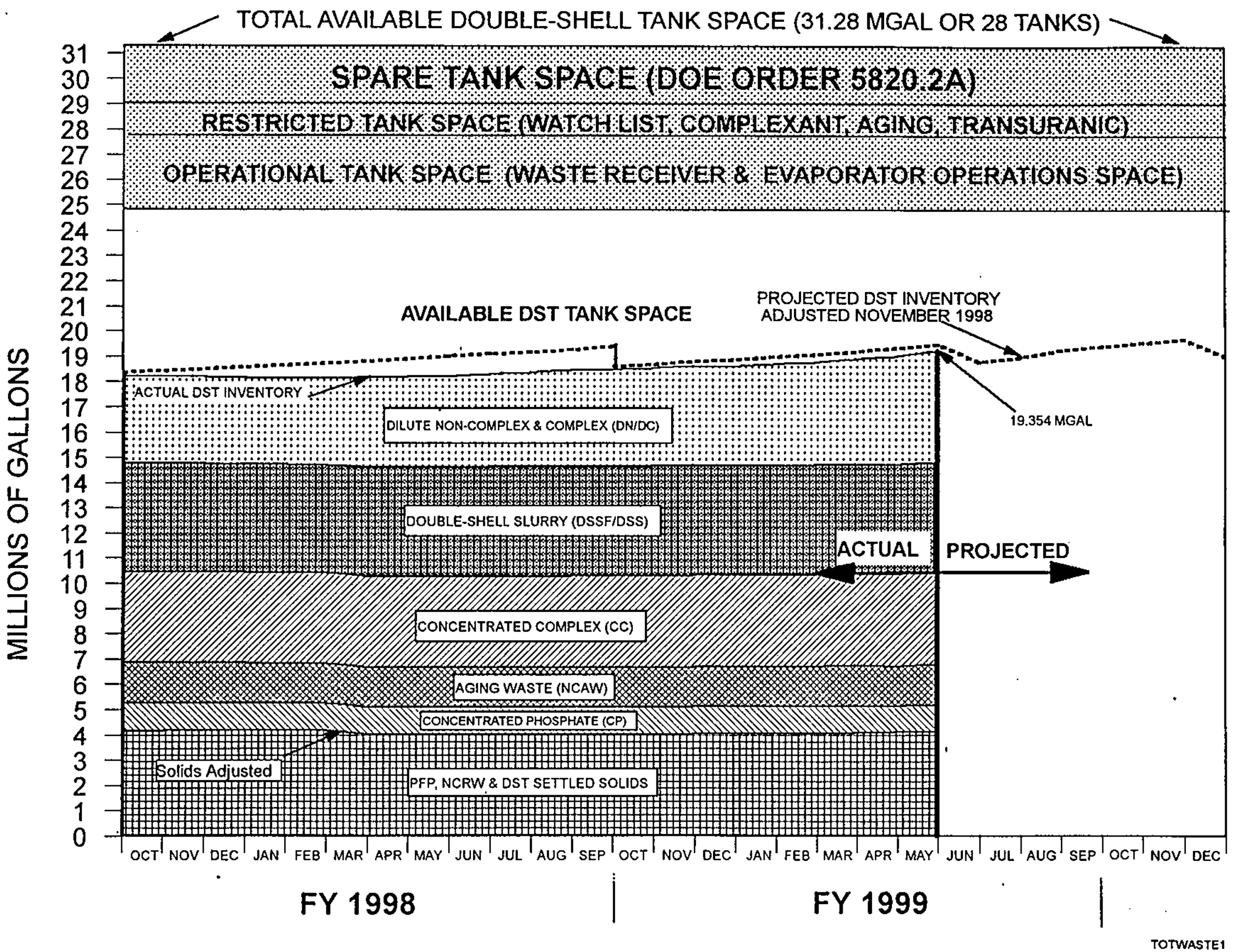

FIGURE B-1. TOTAL DOUBLE-SHELL TANK INVENTORY

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APPENDIX C

TANK AND EQUIPMENT CODE AND STATUS DEFINITIONS

C. TANK AND EQUIPMENT CODE/STATUS DEFINITIONS

May 31, 1999

1. TANK STATUS CODES

WASTE TYPE (also see definitions, section 3)

AGING	Aging Waste (Neutralized Current Acid Waste [NCAW])
CC	Complexant Concentrate Waste
CP	Concentrated Phosphate Waste
DC	Dilute Complexed Waste
DN	Dilute Non-Complexed Waste
DSS	Double-Shell Slurry
DSSF	Double-Shell Slurry Feed
NCPLX	Non-Complexed Waste
PD/PN	Plutonium-Uranium Extraction (PUREX) Neutralized Cladding Removal Waste (NCRW), transuranic waste (TRU)
PT	Plutonium Finishing Plant (PFP) TRU Solids

TANK USE (DOUBLE-SHELL TANKS ONLY)

CWHT	Concentrated Waste Holding Tank
DRCVR	Dilute Receiver Tank
EVFD	Evaporate Feed Tank
SRCVR	Slurry Receiver Tank

2. SOLID AND LIQUID VOLUME DETERMINATION METHODS

F	Food Instrument Company (FIC) Automatic Surface Level Gauge
E	ENRAF Surface Level Gauge (being installed to replace FICs)
M	Manual Tape Surface Level Gauge
P	Photo Evaluation
S	Sludge Level Measurement Device

3. DEFINITIONS

WASTE TANKS - GENERAL

Waste Tank Safety Issue

A potentially unsafe condition in the handling of waste material in underground storage tanks that requires corrective action to reduce or eliminate the unsafe condition.

Watch List Tank

An underground storage tank containing waste that requires special safety precautions because it may have a serious potential for release of high level radioactive waste because of uncontrolled increases in temperature or pressure. Special restrictions have been placed on these tanks by "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510, (also known as the Wyden Amendment).

Characterization

Characterization is understanding the Hanford tank waste chemical, physical, and radiological properties to the extent necessary to insure safe storage and interim operation, and ultimate disposition of the waste.

WASTE TYPES

Aging Waste (AGING)
High level, first cycle solvent extraction waste from the PUREX plant (NCAW)

Concentrated Complexant (CC)
Concentrated product from the evaporation of dilute complexed waste.

Concentrated Phosphate Waste (CP)
Waste originating from the decontamination of the N Reactor in the 100 N Area. Concentration of this waste produces concentrated phosphate waste.

Dilute Complexed Waste (DC)
Characterized by a high content of organic carbon including organic complexants: ethylenediaminetetra-acetic acid (EDTA), citric acid, and hydroxyethyl-ethylenediaminetriacetic acid (HEDTA), being the major complexants used. Main sources of DC waste in the DST system are saltwell liquid inventory (from SSTs).

Dilute Non-Complexed Waste (DN)
Low activity liquid waste originating from T and S Plants, the 300 and 400 Areas, PUREX facility (decladding supernatant and miscellaneous wastes), 100 N Area (sulfate waste), B Plant, saltwells, and PFP (supernate).

Double-Shell Slurry (DSS)
Waste that exceeds the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. For reporting purposes, DSS is considered a solid.

Double-Shell Slurry Feed (DSSF)
Waste concentrated just before reaching the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. This form is not as concentrated as DSS.

Non-complexed (NCPLX)
General waste term applied to all Hanford Site (NCPLX) liquors not identified as complexed.

PUREX Decladding (PD)
PUREX Neutralized Cladding Removal Waste (NCRW) is the solids portion of the PUREX plant neutralized cladding removal waste stream; received in Tank Farms as a slurry. NCRW solids are classified as transuranic (TRU) waste.

PFP TRU Solids (PT)
TRU solids fraction from PFP Plant operations.

Drainable Interstitial Liquid (DIL)
Interstitial liquid that is not held in place by capillary forces, and will therefore migrate or move by gravity. (See also Section 4)

Supernate
The liquid above the solids in waste storage tanks. (See also Section 4)

Ferrocyanide
A compound of iron and cyanide commonly expressed as FeCN. The actual formula for the ferrocyanide anion is $[Fe(CN)_6]^{-4}$.

INTERIM STABILIZATION (Single-Shell Tanks only)

Interim Stabilized (IS)

A tank which contains less than 50 Kgallons of drainable interstitial liquid and less than 5 Kgallons of supernatant liquid. If the tank was jet pumped to achieve interim stabilization, then the jet pump flow must also have been at or below 0.05 gpm before interim stabilization criteria is met.

Jet Pump

The jet pump system includes 1) a jet assembly with foot valve mounted to the base of two pipes that extend from the top of the well to near the bottom of the well casing inside the saltwell screen, 2) a centrifugal pump to supply power fluid to the down-hole jet assembly, 3) flexible or rigid transfer jumpers, 4) a flush line, and 5) a flowmeter. The jumpers contain piping, valves, and pressure and limit switches.

The centrifugal pump and jet assembly are needed to pump the interstitial liquid from the saltwell screen into the pump pit, nominally a 40-foot elevation rise. The power fluid passes through a nozzle in the jet assembly and acts to convert fluid pressure head to velocity head, thereby reducing the pressure in the jet assembly chamber. The reduction in pressure allows the interstitial liquid to enter the jet assembly chamber and mix with the power fluid. Velocity head is converted to pressure head above the nozzle, lifting power fluid, and interstitial liquid to the pump pit. Pumping rates vary from 0.05 gallons to about 4 gpm.

Saltwell Screen

The saltwell system is a 10-inch diameter saltwell casing consisting of a stainless steel saltwell screen welded to a Schedule 40 carbon steel pipe. The casing and screen are to be inserted into the 12-inch tank riser located in the pump pit. The stainless steel screen portion of the system will extend through the tank waste to near the bottom of the tank. The saltwell screen portion of the casing is an approximately 10-foot length of 300 Series, 10-inch diameter, stainless steel pipe with screen openings (slots) of 0.05 inches.

Emergency Pumping Trailer

A 45-foot tractor-type trailer is equipped to provide storage space and service facilities for emergency pumping equipment: this consists of two dedicated jet pump jumpers and two jet pumps, piping and dip tubes for each, two submersible pumps and attached piping, and a skid-mounted Weight Factor Instrument Enclosure (WFIE) with an air compressor and electronic recording instruments. The skid also contains a power control station for the pumps, pump pit leak detection, and instrumentation. A rack for over 100 feet of overground double-contained piping is also in the trailer.

INTRUSION PREVENTION (ISOLATION) Single-Shell Tanks only

Partially Interim Isolated (PI)

The administrative designation reflecting the completion of the physical effort required for Interim Isolation except for isolation of risers and piping that is required for jet pumping or for other methods of stabilization.

Interim Isolated (II)

The administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box. In June 1993, Interim Isolation was replaced by Intrusion Prevention.

Intrusion Prevention (IP)

Intrusion Prevention is the administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box. Under no circumstances are electrical or instrumentation devices disconnected or disabled during the intrusion prevention process (with the exception of the electrical pump).

Controlled, Clean, and Stable (CCS)

Controlled, Clean, and Stable reflects the completion of several objectives: "Controlled" - provide remote monitoring for required instrumentation and implement controls required in the TWRS Authorization Basis; "Clean" - remove surface soil contamination and downpost the Tank Farms to RBA/URMA/RA radiological control status, remove abandoned equipment, and place reusuable equipment in compliant storage; and "Stable" - remove pumpable liquids from the SSTs and IMUSTs and isolate the tanks.

TANK INTEGRITY

Sound

The integrity classification of a waste storage tank for which surveillance data indicate no loss of liquid attributed to a breach of integrity.

Assumed Leaker

The integrity classification of a waste storage tank for which surveillance data indicate a loss of liquid attributed to a breach of integrity.

Assumed Re-Leaker

A condition that exists after a tank has been declared as an "assumed leaker" and then the surveillance data indicates a new loss of liquid attributed to a breach of integrity.

TANK INVESTIGATION

Intrusion

A term used to describe the infiltration of liquid into a waste tank.

SURVEILLANCE INSTRUMENTATION

Drywells

Drywells are vertical boreholes with 6-inch (internal diameter) carbon steel casings positioned radially around SSTs. These wells range between 50 and 250 feet in depth, and are monitored between the range of 50 to 150 feet. The wells are sealed when not in use. They are called drywells because they do not penetrate to the water table and are therefore usually "dry." There are 759 drywells.

Monitoring is done by gamma radiation or neutron-moisture sensors to obtain scan profiles of radiation or moisture in the soil as a function of well depth, which could be indicative of tank leakage.

Two single-shell tanks (C-105 and C-106) are currently monitored monthly by gamma radiation sensors. The remaining drywells are monitored on request by gamma radiation sensors. Monitoring by neutron-moisture sensors is done only on request.

Laterals

Laterals are horizontal drywells positioned under single-shell waste storage tanks to detect radionuclides in the soil which could be indicative of tank leakage. These drywells can be monitored by radiation detection probes. Laterals are 4-inch inside diameter steel pipes located 8 to 10 feet below the tank's concrete base. There are three laterals per tank. Laterals are located only in A and SX farms. There are currently no functioning laterals and no plan to prepare them for use.

Surface Levels

The surface level measurements in all waste storage tanks are monitored by manual or automatic conductivity probes, and recorded and transmitted or entered into the Surveillance Analysis Computer System (SACS).

Automatic FIC

An automatic waste surface level measurement device is manufactured by the Food Instrument Company (FIC). The instrument consists of a conductivity electrode (plummet) connected to a calibrated steel tape, a steel tape reel housing and a controller that automatically raises and lowers the plummet to obtain a waste surface level reading. The controller can provide a digital display of the data and until February 1999, the majority of the FICs transmitted readings to the CASS. Since CASS retirement, all FIC gauges are read manually. FICs are being replaced by ENRAF detectors (see below).

ENRAF 854 ATG Level Detector

FICs and some manual tapes are in the process of being replaced by the ENRAF ATG 854 level detector. The ENRAF gauge, fabricated by ENRAF Incorporated, determines waste level by detecting variations in the weight of a displacer suspended in the tank waste. The displacer is connected to a wire wound onto a precision measuring drum. A level causes a change in the weight of the displacer which will be detected by the force transducer. Electronics within the gauge causes the servo motor to adjust the position of the displacer and compute the tank level based on the new position of the displacer drum. The gauge displays the level in decimal inches. The first few ENRAFs that received remote reading capability transmit liquid level data via analog output to the Tank Monitor and Control System (TMACS). The remaining ENRAFs and future installations will transmit digital level data to TMACS via an ENRAF Computer Interface Unit (CIU). The CIU allows fully remote communication with the gauge, minimizing tank farm entry.

Annulus

The annulus is the space between the inner and outer shells on DSTs only. Drain channels in the insulating and/or supporting concrete carry any leakage to the annulus space where conductivity probes are installed. The annulus conductivity probes and radiation detectors are the primary means of leak detection for all DSTs.

Liquid Observation Well (LOW)

In-tank liquid observation wells are used for monitoring the interstitial liquid level (ILL) in single-shell waste storage tanks. The wells are usually constructed of fiberglass or TEFZEL-reinforced epoxy-polyester resin (TEFZEL, a trademark of E. I. du Pont de Nemours & Company). There are a few LOWs constructed of steel. LOWs are sized to extend to within 1 inch of the bottom of the waste tank, are sealed at their bottom ends and have a nominal outside diameter of 3.5 inches. Two probes are used to monitor changes in the ILL; gamma and neutron, which can indicate intrusions or leakage by increases or decreases in the ILL. There are 65 LOWs (64 are in operation) installed in SSTs that contain or are capable of containing greater than 50 Kgallons of drainable interstitial liquid, and in two DSTs only. The LOWs installed in two DSTs, (SY-102 and AW-103 tanks), are used for special, rather than routine, surveillance purposes only.

Thermocouple (TC)

A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple on a device (probe) is called a thermocouple tree. In DSTs there may be one or more thermocouple trees in risers in the primary tank. In addition, in DSTs only, there are thermocouple elements installed in the insulating concrete, the lower primary tank knuckle, the secondary tank concrete foundation, and in the outer structural concrete.

These monitor temperature gradients within the concrete walls, bottom of the tank, and the domes. In SSTs, one or more thermocouples may be installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple (probe) may be installed in a riser, or lowered down an existing riser or LOW. There are also four thermocouple laterals beneath Tank 105-A in which temperature readings are taken in 34 thermocouples.

In-tank Photographs and Videos

In-tank photographs and videos may be taken to aid in resolving in-tank measurement anomalies and determine tank integrity. Photographs and videos help determine sludge and liquid levels by visual examination.

TERMS/ACRONYMS

CASS	Computer Automated Surveillance System - this system was retired in February 1999
CCS	Controlled, Clean and Stable (tank farms)

II Interim Isolated

IP Intrusion Prevention Completed

IS Interim Stabilized

MT/FIC/ENRAF Manual Tape, Food Instrument Corporation, ENRAF Corporation (surface level measurement devices)

OSD Operating Specifications Document

PI Partial Interim Isolated

SAR Safety Analysis Reports

SHMS Standard Hydrogen Monitoring System

TMACS Tank Monitor and Control System

TPA Hanford Federal Facility Consent and Compliance Order, "Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy," Fourth Amendment, 1994 (Tri-Party Agreement)

USQ Unreviewed Safety Question

Wyden Amendment "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the National Defense Authorization Act for Fiscal Year 1991, November 5, 1990, Public Law 101- 510.

4. INVENTORY AND STATUS BY TANK – COLUMN VOLUME CALCULATIONS AND DEFINITIONS FOR TABLE E-6 (SINGLE-SHELL TANKS)

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Total Waste	Solids volume plus Supernatant liquid. Solids include sludge and saltcake (see definitions below)
Supernate	Drainable Liquid Remaining minus Drainable Interstitial. Supernate is the liquid floating on the surface of the waste. Supernate is usually derived by subtracting the solids level measurement from the liquid level measurement. In some cases, the supernatant volume includes floating solid crusts because their volume cannot be measured. In-tank photographs or videos are useful in estimating the liquid volumes; the area of solids covered and the average depth can be estimated.
Drainable Interstitial Liquid	Drainable Liquid Remaining minus Supernate. Drainable interstitial liquid is calculated based on the saltcake and sludge volumes, using calculated porosity values from past pumping or actual data for each tank, when available. Interstitial liquid is liquid that fills the interstitial spaces of the solids waste. Drainable interstitial liquid is calculated based on the saltcake and sludge volumes in the tank. The sum of the interstitial liquid contained in saltcake and sludge is the initial volume of drainable interstitial liquid. The volume reported as Drainable Interstitial Liquid is the initial volume of drainable interstitial liquid minus interstitial liquid removed by pumping.

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Pumped This Month	Net total gallons of liquid pumped from the tank during the month. If supernate is present, pump production is first subtracted from the supernatant volume. The remainder is then subtracted from the drainable interstitial liquid volume. The total pumped volume is subtracted from drainable liquid remaining and pumpable liquid remaining. Pump production takes into account the amount of water added to the tank during the month (if any).
Total Pumped	Cumulative net total gallons of liquid pumped from 1979 to date.
Drainable Liquid Remaining	Supernate plus Drainable Interstitial. (See Supernatant Liquid and Drainable Interstitial Liquid above for definitions). The total Drainable Liquid Remaining is the sum of drainable interstitial liquid and supernate minus total gallons pumped.
Pumpable Liquid Remaining	Drainable Liquid Remaining minus unpumpable volume. (See Drainable Liquid Remaining and Pumped this Month for definitions). Not all drainable interstitial liquid is pumpable. The volume shown as Pumpable Liquid Remaining is the sum of drainable interstitial liquid and supernate minus the unpumpable volume and total gallons pumped.
Sludge	Solids formed during sodium hydroxide additions to waste. Sludge usually was in the form of suspended solids when the waste was originally received in the tank from the waste generator. In-tank photographs or videos may be used to estimate the volume.
Saltcake	Results from crystallization and precipitation after concentration of liquid waste, usually in an evaporator. If saltcake is layered over sludge, it is only possible to measure total solids volume. In-tank photographs or videos may be used to estimate the saltcake volume.
Solids Volume Update	Indicates the latest update of any change in the solids volume.
Solids Update Source - See Footnote	Indicates the source or basis of the latest solids volume update.
Last In-tank Photo	Date of last in-tank photographs taken.
Last In-tank Video	Date of last in-tank video taken.
See Footnotes for These Changes	Indicates any change made the previous month. A footnote explanation for the change follows the Inventory and Status by Tank section (Table E-6).

APPENDIX D

TANK FARM CONFIGURATION, STATUS, AND FACILITIES CHARTS

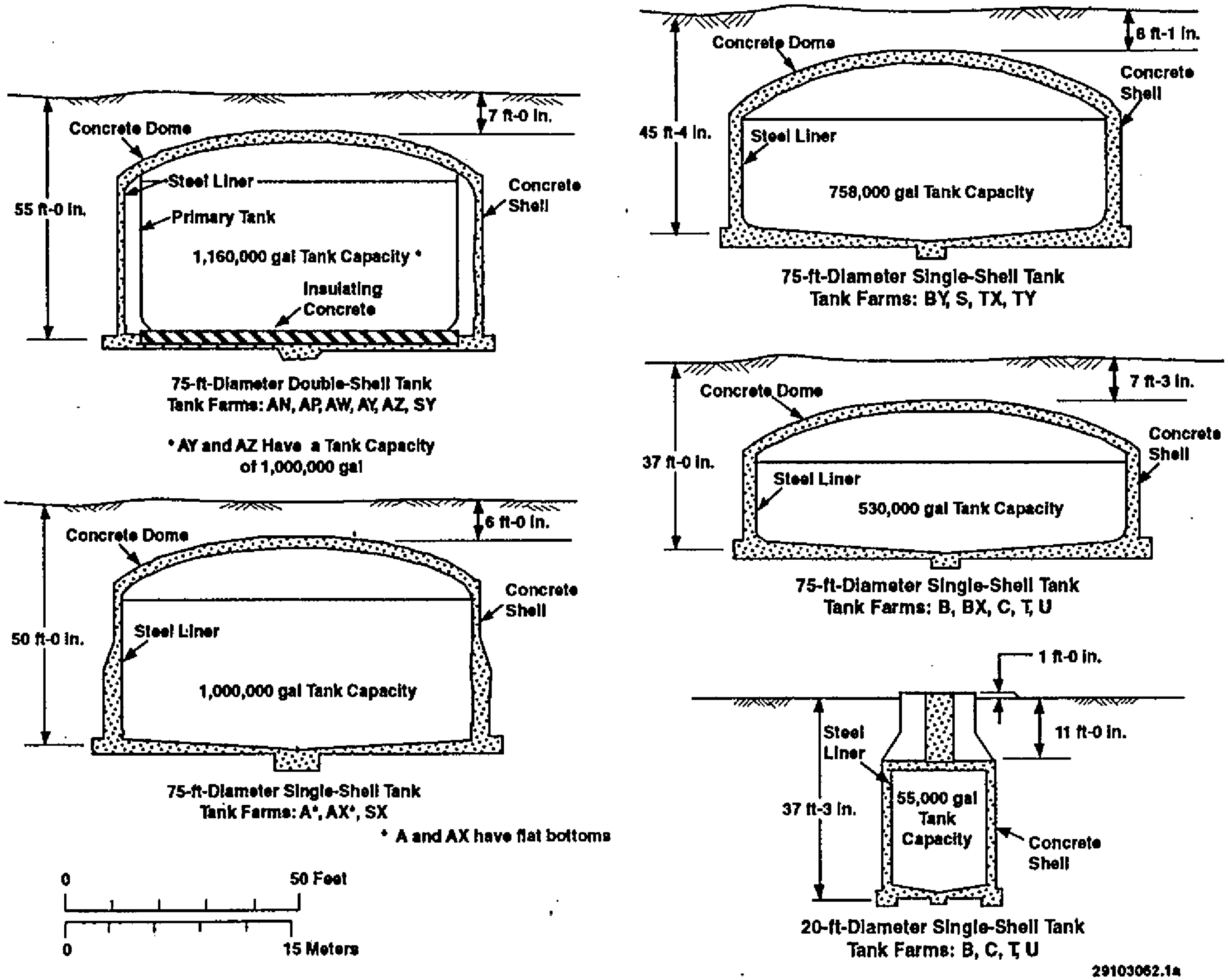

FIGURE D-1. HIGH-LEVEL WASTE TANK CONFIGURATION

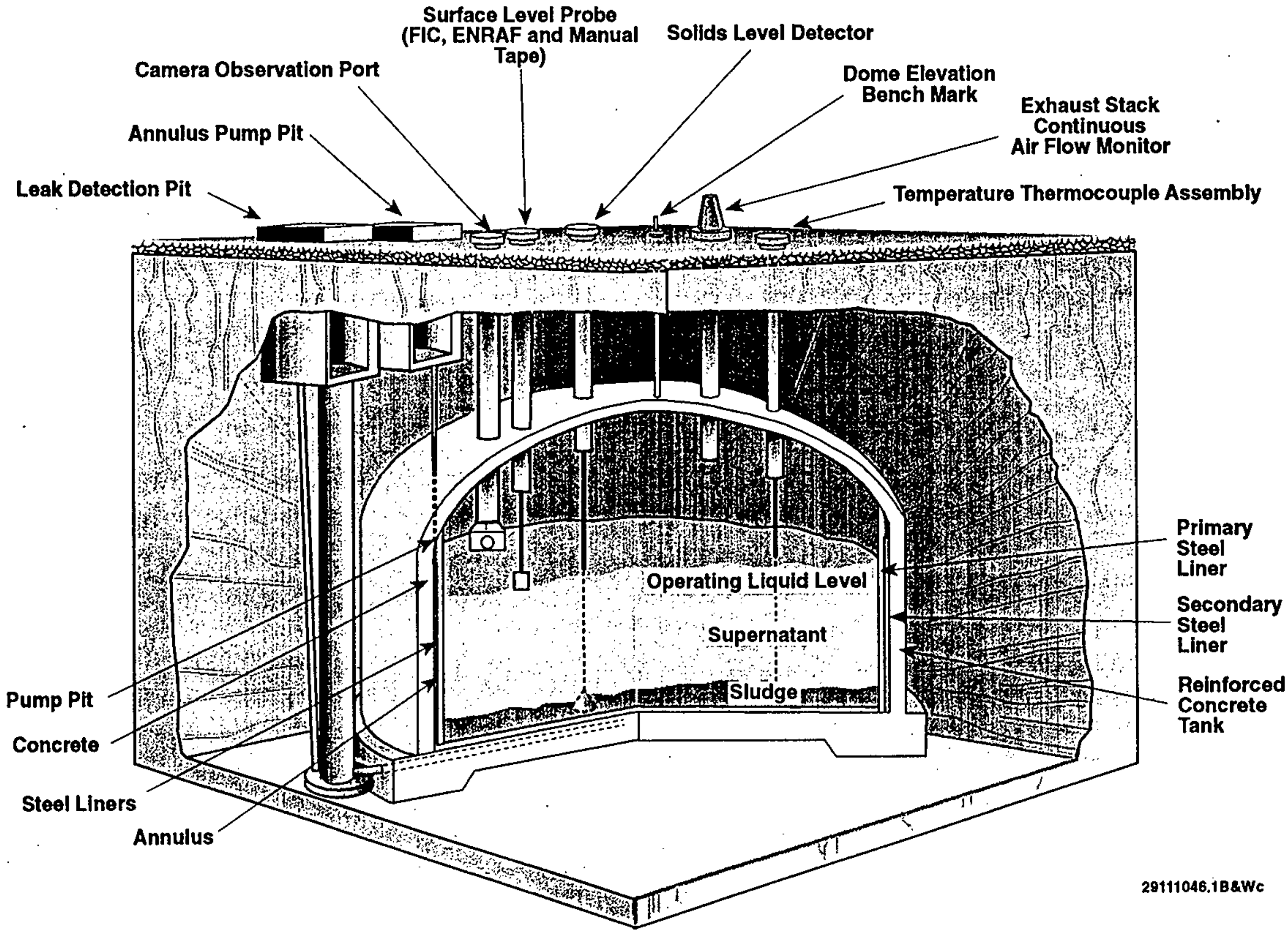

FIGURE D-2. DOUBLE-SHELL TANK INSTRUMENTATION CONFIGURATION

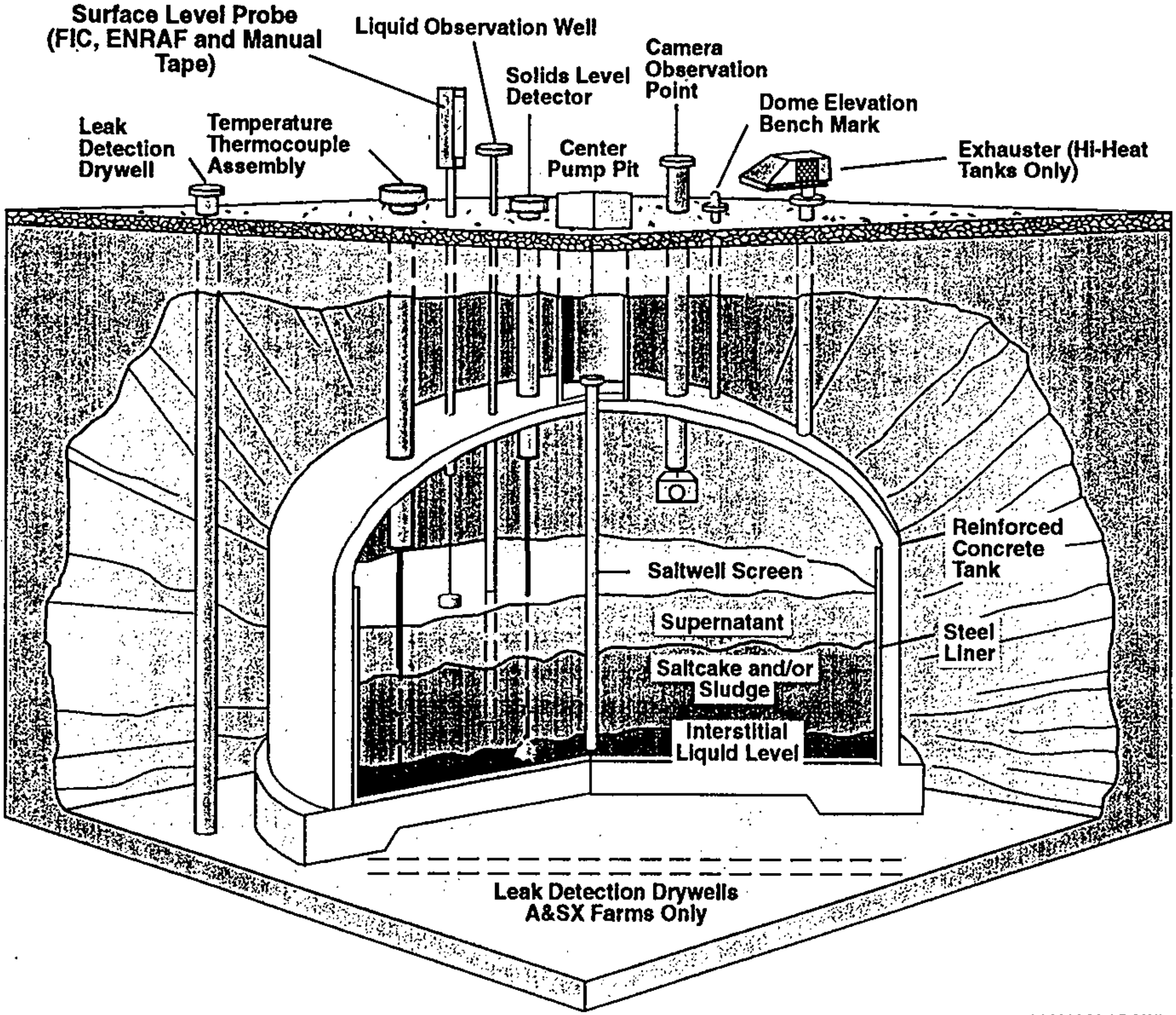

FIGURE D-3. SINGLE-SHELL TANK INSTRUMENTATION CONFIGURATION

THE HANFORD TANK FARM FACILITIES CHARTS (colored foldouts)

ARE ONLY BEING INCLUDED IN THIS REPORT ON A QUARTERLY BASIS

(i.e., months ending March 31, June 30, September 30, December 31)

NOTE: COPIES OF THE FACILITIES CHARTS CAN BE OBTAINED

FROM DENNIS BRUNSON, MULTI-MEDIA SERVICES

376-2345, G3-51

ALMOST ANY SIZE IS AVAILABLE, AND CAN BE LAMINATED

P-Card required

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APPENDIX E

MONTHLY SUMMARY
TANK USE SUMMARY
PUMPING RECORD, LIQUID STATUS AND PUMPABLE
LIQUID REMAINING IN TANK FARMS
INVENTORY SUMMARY BY TANK FARM
INVENTORY AND STATUS BY TANK

TABLE E-1. MONTHLY SUMMARY

TANK STATUS

May 31, 1999

	200 EAST AREA	200 WEST AREA	TOTAL
IN SERVICE	25	03	28 (1)
OUT OF SERVICE	66	83	149
SOUND	59	51	110
ASSUMED LEAKER	32	35	67
INTERIM STABILIZED	60	59	119
ISOLATED			
PARTIAL INTERIM	11	30	41
INTRUSION PREVENTION COMPLETE	55	53	108
CONTROLLED, CLEAN, AND STABLE	12	24	36

WASTE VOLUMES (Kgallons)

		200 EAST AREA	200 WEST AREA	1600.00 TOTAL	SST TANKS	DST TANKS	TOTAL
SUPERNATANT							
AGING	Aging waste	1606	0	1606	0	1606	1606
CC	Complexant concentrate waste	1882	1527	3409	3	3406	3409
CP	Concentrated phosphate waste	1093	0	1093	0	1093	1093
DC	Dilute complexed waste	1166	0	1166	1	1165	1166
DN	Dilute non-complexed waste	2529	0	2529	0	2529	2529
DN/PD	Dilute non-complex/PUREX TRU solid	312	0	312	0	312	312
DN/PT	Dilute non-complex/PFP TRU solids	0	723	723	0	723	723
NCPLX	Non-complexed waste	199	386	585	585	0	585
DSSF	Double-shell slurry feed	5302	48	5350	951	4399	5350
TOTAL SUPERNATANT		14089	2684	16773	1540	15233	16773
SOLIDS							
Double-shell slurry		410	0	410	0	410	410
Sludge		9320	6237	15557	11925	3632	15557
Saltcake		5188	16392	21580	21501	79	21580
TOTAL SOLIDS		14918	22629	37547	33426	4121	37547
TOTAL WASTE		29007	25313	54320	34966	19354	54320
AVAILABLE SPACE IN TANKS		11251	728	11979	0	11979	11979
DRAINABLE INTERSTITIAL		1925	4458	6383	6095	288	6383
DRAINABLE LIQUID REMAINING		15910	7166	23076	7555	15521	23076

(1) Includes six double-shell tanks on Hydrogen Watch List not currently allowed to receive waste, AN-103, AN-104, AN-105, AW-101, SY-101, and SY-103.

TABLE E-2. TANK USE SUMMARY

May 31, 1999

				ISOLATED TANKS			
TANK FARMS	TANKS AVAILABLE TO RECEIVE WASTE TRANSERS	SOUND	ASSUMED LEAKER	PARTIAL INTERIM	INTRUSION PREVENTION COMPLETED	CONTROLLED CLEAN, AND STABLE	INTERIM TABILIZED TANKS
EAST							
A	0	3	3	2	4	0	5
AN	7 (1)	7	0	0	0		0
AP	8	8	0	0	0		0
AW	6 (1)	6	0	0	0		0
AX	0	2	2	1	3		3
AY	2	2	0	0	0		0
AZ	2	2	0	0	0		0
B	0	6	10	0	16		16
BX	0	7	5	0	12	12	12
BY	0	7	5	5	7		10
C	0	9	7	3	13		14
Total	25	59	32	11	55	12	60
WEST							
S	0	11	1	10	2		4
SX	0	5	10	6	9		9
SY	3 (1)	3	0	0	0		0
T	0	9	7	5	11		14
TX	0	10	8	0	18	18	18
TY	0	1	5	0	6	6	6
U	0	12	4	9	7		8
Total	3	51	35	30	53	24	59
TOTAL	28	110	67	41	108	36	119

(1) Six Double-Shell Tanks on the Hydrogen Tank Watch List are not currently receiving waste transfers (AN-103, 104, 105, AW-101, SY-101 and 103).

TABLE E-3. PUMPING RECORD, LIQUID STATUS AND PUMPABLE LIQUID REMAINING IN TANK FARMS

May 31, 1999

Waste Volumes (Kgallons)

TANK FARMS	PUMPED THIS MONTH	PUMPED FY TO DATE	CUMULATIVE TOTAL PUMPED 1979 TO DATE	SUPERNATANT LIQUID	DRAINABLE INTERSTITIAL REMAINING	DRAINABLE LIQUID REMAINING	PUMPABLE SST LIQUID REMAINING
EAST							
A	0.0	0.0	150.5	517	291	758	697
AN	N/A	N/A	N/A	3705	127	3832	N/A
AP	N/A	N/A	N/A	4102	3	4105	N/A
AW	N/A	N/A	N/A	3112	142	3254	N/A
AX	0.0	0.0	13.0	389	222	611	540
AY	N/A	N/A	N/A	458	11	469	N/A
AZ	N/A	N/A	N/A	1606	5	1611	N/A
B	0.0	0.0	0.0	15	191	206	107
BX	N/A	0.0	200.2	24	107	132	N/A
BY	0.0	0.0	1567.8	0	596	596	476
C	0.0	0.0	103.0	161	230	336	247
Total	0.0	0.0	2034.5	14089	1925	15910	2067
WEST							
S	47.0	86.8	955.2	67	1292	1359	1246
SX	34.4	152.8	279.7	163	1304	1491	1389
SY	N/A	N/A	N/A	2250	0	2250	N/A
T	0.0	30.1	239.6	28	174	202	132
TX	N/A	0.0	1205.7	5	250	255	N/A
TY	N/A	0.0	29.9	3	31	34	N/A
U	0.0	0.0	0.0	168	1407	1575	1484
Total	81.4	269.7	2710.1	2684	4458	7166	4251
TOTAL	81.4	269.7	4744.6	16773	6383 (1)	23076	6318 (1)

(1) Volume based on 21% (sludge waste) and 50% (saltcake waste) liquid in solid (porosity) value, per WHC-SD-W236A-ES-012, Rev .1, dated May 21, 1996, a re-evaluation of the non-stabilized tanks.

N/A = Not applicable for Double-Shell Tank Farms, and Single-Shell Tank Farms which have been declared Controlled, Clean and Stable (BX, TX, TY).

TABLE E-4. INVENTORY SUMMARY BY TANK FARM

May 31, 1999

TANK FARM	TOTAL WASTE	AVAIL SPACE	SUPERNATANT LIQUID VOLUMES (Kgallons)										SOLIDS VOLUME			
			AGING	CC	CP	DC	DN	DN/PD	DN/PT	DSSE	NCPLX	TOTAL	DSS	SLUDGE	SALT CAKE	TOTAL
EAST																
A	1537	0	0	0	0	0	0	0	0	517	0	517	0	556	464	1020
AN	5439	2541	0	1790	0	0	126	0	0	1789	0	3705	410	1324	0	1734
AP	4192	4928	0	0	1093	107	1110	0	0	1792	0	4102	0	90	0	90
AW	4545	2295	0	89	0	1006	887	312	0	818	0	3112	0	1358	75	1433
AX	906	0	0	3	0	0	0	0	0	386	0	389	0	19	498	517
AY	676	1284	0	0	0	52	406	0	0	0	0	458	0	218	0	218
AZ	1757	203	1606	0	0	0	0	0	0	0	0	1606	0	151	0	151
B	2057	0	0	0	0	0	0	0	0	0	15	15	0	1697	345	2042
BX	1496	0	0	0	0	0	0	0	0	0	24	24	0	1351	121	1472
BY	4482	0	0	0	0	0	0	0	0	0	0	0	0	797	3685	4482
C	1920	0	0	0	0	1	0	0	0	0	160	161	0	1759	0	1759
Total	29007	11251	1606	1882	1093	1166	2529	312	0	5302	199	14089	410	9320	5188	14918
WEST																
S	5186	0	0	0	0	0	0	0	0	50	17	67	0	1206	3913	5119
SX	4315	0	0	0	0	0	0	0	0	0	163	163	0	1310	2842	4152
SY	2745	728	0	1527	0	0	0	0	723	0	0	2250	0	491	4	495
T	1867	0	0	0	0	0	0	0	0	0	28	28	0	1839	0	1839
TX	7009	0	0	0	0	0	0	0	0	0	5	5	0	241	6763	7004
TY	638	0	0	0	0	0	0	0	0	0	3	3	0	571	64	635
U	3553	0	0	0	0	0	0	0	0	31	137	168	0	579	2806	3385
Total	25313	728	0	1527	0	0	0	0	723	81	353	2684	0	6237	16392	22629
TOTAL	54320	11979	1606	3409	1093	1166	2529	312	723	5383	552	16773	410	15557	21580	37547

TABLE E-5. INVENTORY AND STATUS BY TANK - DOUBLE SHELL TANKS

May 31, 1999

TANK STATUS							LIQUID VOLUME				SOLIDS VOLUME			VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WAST MATL	TANK INTEGRITY	TANK USE	EQUIVA-LENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL. SPACE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	DSS (Kgal)	SLUDGE	SALT CAKE	LIQUID VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTE FOR THESE CHANGES
								AN TANK FARM STATUS											
AN-101	DN	SOUND	DRCVR	57.8	159	981	126	0	126	126	0	33	0	FM	S	04/30/96	0/ 0/ 0		
AN-102	CC	SOUND	CWHT	385.5	1060	80	971	3	974	971	0	89	0	FM	S	08/22/89	0/ 0/ 0		
AN-103	DSS	SOUND	CWHT	348.0	957	183	547	0	547	547	410	0	0	FM	S	03/31/97	10/29/87		
AN-104	DSSF	SOUND	CWHT	382.5	1052	88	603	48	651	629	0	449	0	FM	S	03/31/97	08/19/88		
AN-105	DSSF	SOUND	CWHT	410.2	1128	12	639	53	692	670	0	489	0	FM	S	03/31/97	01/26/88		
AN-106	CC	SOUND	CWHT	14.2	39	1101	22	0	22	22	0	17	0	FM	S	08/22/89	0/ 0/ 0		
AN-107	CC	SOUND	CWHT	379.6	1044	96	797	23	820	798	0	247	0	FM	S	08/22/89	09/01/88		
7 DOUBLE-SHELL TANKS				TOTALS	5439	2541	3705	127	3832	3763	410	1324	0						
								AP TANK FARM STATUS											
AP-101	DSSF	SOUND	DRCVR	405.1	1114	26	1114	0	1114	1114	0	0	0	FM	S	05/01/89	0/ 0/ 0		
AP-102	CP	SOUND	GRTFD	397.5	1093	47	1093	0	1093	1093	0	0	0	FM	S	07/11/89	0/ 0/ 0		
AP-103	DN	SOUND	DRCVR	104.4	287	853	286	0	286	286	0	1	0	FM	S	05/31/96	0/ 0/ 0		
AP-104	DN	SOUND	GRTFD	8.7	24	1116	24	0	24	24	0	0	0	FM	S	10/13/88	0/ 0/ 0		
AP-105	DSSF	SOUND	CWHT	278.9	767	373	678	3	681	678	0	89	0	FM	S	03/31/98	0/ 0/ 0	09/27/95	
AP-106	DN	SOUND	DRCVR	34.5	95	1045	95	0	95	95	0	0	0	FM	S	10/13/88	0/ 0/ 0		
AP-107	DN	SOUND	DRCVR	256.4	705	435	705	0	705	705	0	0	0	FM	S	10/13/88	0/ 0/ 0		
AP-108	DC	SOUND	DRCVR	38.9	107	1033	107	0	107	107	0	0	0	FM	S	10/13/88	0/ 0/ 0		
8 DOUBLE-SHELL TANKS				TOTALS	4192	4928	4102	3	4105	4102	0	90	0						
								AW TANK FARM STATUS											
AW-101	DSSF	SOUND	CWHT	408.7	1124	16	818	30	848	826	0	306	0	FM	S	03/31/97	03/17/88		
AW-102	DC	SOUND	EVFD	380.4	1046	94	1006	0	1006	1006	0	40	0	FM	S	08/31/97	02/02/83		
AW-103	DN/PD	SOUND	DRCVR	185.5	510	630	162	35	197	175	0	348	0	FM	S	03/31/98	0/ 0/ 0		
AW-104	DN	SOUND	DRCVR	406.5	1118	22	887	30	917	895	0	156	75	FM	S	03/31/98	02/02/83		
AW-105	DN/PD	SOUND	DRCVR	156.4	430	710	150	27	177	155	0	280	0	FM	S	03/31/98	0/ 0/ 0		
AW-106	CC	SOUND	SRCVR	115.3	317	823	89	20	109	89	0	228	0	FM	S	08/31/97	02/02/83		
6 DOUBLE-SHELL TANKS				TOTALS	4545	2295	3112	142	3254	3146	0	1358	75						

TABLE E-5. INVENTORY AND STATUS BY TANK - DOUBLE SHELL TANKS

May 31, 1999

TANK STATUS							LIQUID VOLUME				SOLIDS VOLUME			VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WAST MATL	TANK INTEGRITY	TANK USE	EQUIVA-LENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL. SPACE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	DSS (Kgal)	SLUDGE	SALT CAKE	LIQUID VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTE FOR THESE CHANGES
								AY TANK FARM STATUS											
AY-101	DC	SOUND	DRCVR	58.2	160	820	52	5	57	52	0	108	0	FM	S	10/31/97	12/28/82		
AY-102	DN	SOUND	DRCVR	187.6	516	464	406	6	412	406	0	110	0	FM	S	03/31/99	04/28/81		(c)
2 DOUBLE-SHELL TANKS				TOTALS	676	1284	458	11	469	458	0	218	0						
								AZ TANK FARM STATUS											
AZ-101	AGING	SOUND	CWHT	307.3	845	135	798	0	798	798	0	47	0	FM	S	10/31/97	08/18/83		
AZ-102	AGING	SOUND	DRCVR	331.6	912	68	808	5	813	808	0	104	0	FM	S	10/31/97	10/24/84		
2 DOUBLE-SHELL TANKS				TOTALS	1757	203	1606	5	1611	1606	0	151	0						
								SY TANK FARM STATUS											
SY-101	CC	SOUND	CWHT	433.8	1193	0	1152	0	1152	1152	0	41	0	FM	S	05/31/96	04/12/89		(b)
SY-102	DN/PT	SOUND	DRCVR	294.9	811	329	723	0	723	723	0	88	0	FM	S	03/31/98	04/29/81		(a)
SY-103	CC	SOUND	CWHT	269.5	741	399	375	0	375	375	0	362	4	FM	S	06/30/96	10/01/86		
3 DOUBLE-SHELL TANKS				TOTALS	2745	728	2250	0	2250	2250	0	491	4						
GRAND TOTAL					19354	11979	15233	288	15521	15325	410	3632	79						

Note: +/- 1 Kgal differences are the result of computer rounding

Tank Farms	Available Space Calculations Used in This Document (Most Conservative)
AN, AP, AW, SY	1,140,000 gal (414.5 in.)
AY, AZ (Aging Waste)	980,000 gal (356.4 in.)

NOTE: Tanks AN-102, AN-107, AY-101, AY-102, AP-103, AP-104, AP-107 - These tanks currently contain waste that is outside of the current corrosion control specification. An alternate strategy of corrosion control (monitor using corrosion probes; adjust chemistry as required for control) is being proposed but has not been fully evaluated. Note that the supernate in AY-102 is within the corrosion specifications, however, the sludge layer is outside the specifications.

(b) Tank SY-101 - Total Waste exceeds the "most conservative" Available Space calculations used for these tanks in this document.

(c) Tank AY-102 - Sludge volume changes are due to C-106 sluicing and are preliminary; actual volume to be calculated after settling.

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								A TANK FARM STATUS										
A-101	DSSF	SOUND	/PI	953	508	263	0.0	0.0	721	697	3	442	P	F	12/31/98	08/21/85		(e)
A-102	DSSF	SOUND	IS/PI	41	4	2	0.0	39.5	6	0	15	22	P	FP	07/27/89	07/20/89		
A-103	DSSF	ASMD LKR	IS/IP	371	5	15	0.0	111.0	20	0	366	0	-	FP	06/03/88	12/28/88		
A-104	NCPLX	ASMD LKR	IS/IP	28	0	0	0.0	0.0	0	0	28	0	M	PS	01/27/78	06/25/86		
A-105	NCPLX	ASMD LKR	IS/IP	19	0	4	0.0	0.0	4	0	19	0	P	MP	08/23/79	08/20/86		
A-106	CP	SOUND	IS/IP	125	0	7	0.0	0.0	7	0	125	0	P	M	09/07/82	08/19/86		
6 SINGLE-SHELL TANKS			TOTALS	1537	517	291	0.0	150.5	758	697	556	464						
								AX TANK FARM STATUS										
AX-101	DSSF	SOUND	/PI	748	386	172	0.0	0.0	558	534	3	359	P	F	12/31/98	08/18/87		(e)
AX-102	CC	ASMD LKR	IS/IP	39	3	14	0.0	13.0	17	3	7	29	F	S	09/06/88	06/05/89		
AX-103	CC	SOUND	IS/IP	112	0	36	0.0	0.0	36	3	2	110	F	S	08/19/87	08/13/87		
AX-104	NCPLX	ASMD LKR	IS/IP	7	0	0	0.0	0.0	0	0	7	0	P	M	04/28/82	08/18/87		
4 SINGLE-SHELL TANKS			TOTALS:	906	389	222	0.0	13.0	611	540	19	498						
								B TANK FARM STATUS										
B-101	NCPLX	ASMD LKR	IS/IP	113	0	6	0.0	0.0	6	0	113	0	P	F	04/28/82	05/19/83		
B-102	NCPLX	SOUND	IS/IP	32	4	0	0.0	0.0	4	0	18	10	P	F	08/22/85	08/22/85		
B-103	NCPLX	ASMD LKR	IS/IP	59	0	0	0.0	0.0	0	0	59	0	F	F	02/28/85	10/13/88		
B-104	NCPLX	SOUND	IS/IP	371	1	44	0.0	0.0	45	38	301	69	M	M	06/30/85	10/13/88		(h)
B-105	NCPLX	ASMD LKR	IS/IP	306	0	23	0.0	0.0	23	0	40	266	P	MP	12/27/84	05/19/88		
B-106	NCPLX	SOUND	IS/IP	117	1	6	0.0	0.0	7	0	116	0	F	F	03/31/85	02/28/85		
B-107	NCPLX	ASMD LKR	IS/IP	165	1	12	0.0	0.0	13	7	164	0	M	M	03/31/85	02/28/85		
B-108	NCPLX	SOUND	IS/IP	94	0	4	0.0	0.0	4	0	94	0	F	F	05/31/85	05/10/85		
B-109	NCPLX	SOUND	IS/IP	127	0	8	0.0	0.0	8	0	127	0	M	M	04/08/85	04/02/85		
B-110	NCPLX	ASMD LKR	IS/IP	246	1	37	0.0	0.0	38	32	245	0	MP	MP	02/28/85	03/17/88		(h)
B-111	NCPLX	ASMD LKR	IS/IP	237	1	35	0.0	0.0	36	30	236	0	F	F	06/28/85	06/26/85		(h)
B-112	NCPLX	ASMD LKR	IS/IP	33	3	0	0.0	0.0	3	0	30	0	F	F	05/31/85	05/29/85		
B-201	NCPLX	ASMD LKR	IS/IP	29	1	3	0.0	0.0	4	0	28	0	M	M	04/28/82	11/12/86	06/23/95	
B-202	NCPLX	SOUND	IS/IP	27	0	3	0.0	0.0	3	0	27	0	P	M	05/31/85	05/29/85	06/15/95	
B-203	NCPLX	ASMD LKR	IS/IP	51	1	5	0.0	0.0	6	0	50	0	PM	PM	05/31/84	11/13/86		
B-204	NCPLX	ASMD LKR	IS/IP	50	1	5	0.0	0.0	6	0	49	0	P	M	05/31/84	10/22/87		
16 SINGLE-SHELL TANKS			TOTALS	2057	15	191	0.0	0.0	206	107	1697	345						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								BX TANK FARM STATUS										
BX-101	NCPLX	ASMD LKR	IS/IP/CCS	43	1	0	0.0	0.0	1	0	42	0	P	M	04/28/82	11/24/88	11/10/94	
BX-102	NCPLX	ASMD LKR	IS/IP/CCS	96	0	4	0.0	0.0	4	0	96	0	P	M	04/28/82	09/18/85		
BX-103	NCPLX	SOUND	IS/IP/CCS	71	9	0	0.0	0.0	9	0	62	0	P	F	11/29/83	10/31/86	10/27/94	(h)
BX-104	NCPLX	SOUND	IS/IP/CCS	99	3	30	0.0	17.4	33	27	96	0	F	F	09/22/89	09/21/89		
BX-105	NCPLX	SOUND	IS/IP/CCS	51	5	6	0.0	15.0	11	4	43	3	F	S	09/03/86	10/23/86		
BX-106	NCPLX	SOUND	IS/IP/CCS	38	0	0	0.0	14.0	0	0	38	0	MP	PS	08/01/95	05/19/88	07/17/95	
BX-107	NCPLX	SOUND	IS/IP/CCS	345	1	29	0.0	23.1	30	23	344	0	MP	P	09/18/90	09/11/90		
BX-108	NCPLX	ASMD LKR	IS/IP/CCS	26	0	1	0.0	0.0	1	0	26	0	M	PS	07/31/79	05/05/94		
BX-109	NCPLX	SOUND	IS/IP/CCS	193	0	13	0.0	8.2	13	8	193	0	FP	P	09/17/90	09/11/90		
BX-110	NCPLX	ASMD LKR	IS/IP/CCS	207	3	16	0.0	1.5	19	13	195	9	MP	M	10/31/94	07/15/94	10/13/94	
BX-111	NCPLX	ASMD LKR	IS/IP/CCS	162	1	1	0.0	116.9	3	1	52	109	M	M	04/06/95	05/19/94	02/28/95	
BX-112	NCPLX	SOUND	IS/IP/CCS	165	1	7	0.0	4.1	8	2	164	0	FP	P	09/17/90	09/11/90		
12 SINGLE-SHELL TANKS			TOTALS:	1496	24	107	0.0	200.2	132	78	1351	121						
								BY TANK FARM STATUS										
BY-101	NCPLX	SOUND	IS/IP	387	0	5	0.0	35.8	5	0	109	278	P	M	05/30/84	09/19/89		
BY-102	NCPLX	SOUND	IS/PI	277	0	11	0.0	159.0	11	0	0	277	MP	M	05/01/95	09/11/87	04/11/95	
BY-103	NCPLX	ASMD LKR	IS/PI	414	0	38	0.0	95.9	38	32	5	409	MP	M	11/25/97	09/07/89	02/24/97	
BY-104	NCPLX	SOUND	IS/IP	406	0	18	0.0	329.5	18	0	40	366	P	M	04/28/82	04/27/83		
BY-105	NCPLX	ASMD LKR	/PI	504	0	192	0.0	0.0	192	186	159	345	P	MP	12/31/98	07/01/86		(e)
BY-106	NCPLX	ASMD LKR	/PI	562	0	244	0.0	63.7	244	238	84	478	P	MP	12/31/98	11/04/82		(e)
BY-107	NCPLX	ASMD LKR	IS/IP	266	0	25	0.0	56.4	25	0	60	206	P	MP	04/28/82	10/15/86		
BY-108	NCPLX	ASMD LKR	IS/IP	228	0	9	0.0	27.5	9	0	154	74	MP	M	04/28/82	10/15/86		
BY-109	NCPLX	SOUND	IS/PI	290	0	37	0.0	157.1	37	20	57	233	F	PS	07/08/87	06/18/97		
BY-110	NCPLX	SOUND	IS/IP	398	0	9	0.0	213.3	9	0	103	295	M	S	09/10/79	07/26/84		
BY-111	NCPLX	SOUND	IS/IP	459	0	0	0.0	313.2	0	0	21	438	P	M	04/28/82	10/31/86		
BY-112	NCPLX	SOUND	IS/IP	291	0	8	0.0	116.4	8	0	5	286	P	M	04/28/82	04/14/88		
12 SINGLE-SHELL TANKS			TOTALS:	4482	0	596	0.0	1567.8	596	476	797	3685						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								C TANK FARM STATUS										
C-101	NCPLX	ASMD LKR	IS/IP	88	0	3	0.0	0.0	3	0	88	0	M	M	11/29/83	11/17/87		
C-102	DC	SOUND	IS/IP	316	0	30	0.0	46.7	30	17	316	0	F	FP	09/30/95	05/18/76	08/24/95	
C-103	NCPLX	SOUND	/PI	202	83	11	0.0	0.0	94	88	119	0	F	S	12/31/98	07/28/87		(e)
C-104	CC	SOUND	IS/IP	295	0	11	0.0	0.0	11	5	295	0	FP	P	09/22/89	07/25/90		
C-105	NCPLX	SOUND	IS/PI	134	2	30	0.0	0.0	32	9	132	0	F	S	10/31/95	08/05/94	08/30/95	
C-106	NCPLX	SOUND	/PI	166	71	61	0.0	0.0	77	72	95	0	F	PS	05/31/99	08/05/94	08/08/94	(l)
C-107	DC	SOUND	IS/IP	237	0	24	0.0	40.8	24	15	237	0	F	S	09/30/95	00/00/00		
C-108	NCPLX	SOUND	IS/IP	66	0	0	0.0	0.0	0	0	66	0	M	S	02/24/84	12/05/74	11/17/94	
C-109	NCPLX	SOUND	IS/IP	66	4	0	0.0	0.0	4	0	62	0	M	PS	11/29/83	01/30/76		
C-110	DC	ASMD LKR	IS/IP	178	1	28	0.0	15.5	29	15	177	0	F	FMP	06/14/95	08/12/86	05/23/95	
C-111	NCPLX	ASMD LKR	IS/IP	57	0	0	0.0	0.0	0	0	57	0	M	S	04/28/82	02/25/70	02/02/95	
C-112	NCPLX	SOUND	IS/IP	104	0	32	0.0	0.0	32	26	104	0	M	PS	09/18/90	09/18/90		
C-201	NCPLX	ASMD LKR	IS/IP	2	0	0	0.0	0.0	0	0	2	0	P	MP	03/31/82	12/02/86		
C-202	EMPTY	ASMD LKR	IS/IP	1	0	0	0.0	0.0	0	0	1	0	P	M	01/19/79	12/09/86		
C-203	NCPLX	ASMD LKR	IS/IP	5	0	0	0.0	0.0	0	0	5	0	P	MP	04/28/82	12/09/86		
C-204	NCPLX	ASMD LKR	IS/IP	3	0	0	0.0	0.0	0	0	3	0	P	MP	04/28/82	12/09/86		
16 SINGLE-SHELL TANKS			TOTALS:	1920	161	230	0.0	103.0	336	247	1759	0						
								S TANK FARM STATUS										
S-101	NCPLX	SOUND	/PI	427	12	132	0.0	0.0	144	138	211	204	F	PS	12/31/98	03/18/88		(e)
S-102	DSSF	SOUND	/PI	549	0	200	1.9	29.7	200	194	105	444	P	FP	12/31/98	03/18/88		(e)(f)
S-103	DSSF	SOUND	/PI	248	17	105	0.0	0.0	122	110	9	222	M	S	12/31/98	06/01/89		(e)
S-104	NCPLX	ASMD LKR	IS/IP	294	1	28	0.0	0.0	29	23	293	0	M	M	12/20/84	12/12/84		
S-105	NCPLX	SOUND	IS/IP	456	0	35	0.0	114.3	35	13	2	454	MP	S	09/26/88	04/12/89		
S-106	NCPLX	SOUND	/PI	426	0	142	45.1	168.9	142	127	0	426	P	FP	12/31/98	03/17/89	09/12/94	(e)(g)
S-107	NCPLX	SOUND	/PI	376	14	82	0.0	0.0	96	90	293	69	F	PS	12/31/98	03/12/87		(e)
S-108	NCPLX	SOUND	IS/PI	450	0	4	0.0	199.8	4	0	4	446	P	MP	12/20/96	03/12/87	12/03/96	
S-109	NCPLX	SOUND	/PI	507	0	177	0.0	111.0	177	167	13	494	F	PS	09/30/75	12/31/98		(e)
S-110	NCPLX	SOUND	IS/PI	390	0	30	0.0	203.1	30	23	131	259	F	PS	05/14/92	03/12/87	12/11/96	
S-111	NCPLX	SOUND	/PI	540	23	204	0.0	3.3	227	221	139	378	P	FP	12/31/98	08/10/89		(e)
S-112	NCPLX	SOUND	/PI	523	0	153	0.0	125.1	153	140	6	517	P	FP	12/31/98	03/24/87		(e)
12 SINGLE-SHELL TANKS			TOTALS:	5186	67	1292	47.0	955.2	1359	1246	1206	3913						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

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THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								SX TANK FARM STATUS										
SX-101	DC	SOUND	/PI	442	0	170	0.0	0.0	170	163	128	314	P	FP	12/31/98	03/10/89		(e)
SX-102	DSSF	SOUND	/PI	543	0	224	0.0	0.0	224	216	117	426	P	M	12/31/98	01/07/88		(e)
SX-103	NCPLX	SOUND	/PI	651	0	278	0.0	0.0	278	271	115	536	F	S	12/31/98	12/17/87		(e)
SX-104	DSSF	ASMD LKR	/PI	584	0	132	17.1	221.1	132	124	136	448	F	S	12/31/98	09/08/88	02/04/98	(a)(e)
SX-105	DSSF	SOUND	/PI	683	0	309	0.0	0.0	309	301	73	610	P	F	12/31/98	06/15/88		(d)(e)
SX-106	NCPLX	SOUND	/PI	479	163	109	17.3	58.6	296	289	52	264	F	PS	12/31/98	06/01/89		(b)(e)
SX-107	NCPLX	ASMD LKR	IS/IP	104	0	5	0.0	0.0	5	0	104	0	P	M	04/28/82	03/06/87		
SX-108	NCPLX	ASMD LKR	IS/IP	87	0	5	0.0	0.0	5	0	87	0	P	M	12/31/93	03/06/87		
SX-109	NCPLX	ASMD LKR	IS/IP	244	0	48	0.0	0.0	48	25	0	244	P	M	01/10/96	05/21/86		
SX-110	NCPLX	ASMD LKR	IS/IP	62	0	0	0.0	0.0	0	0	62	0	M	PS	10/06/76	02/20/87		
SX-111	NCPLX	ASMD LKR	IS/IP	125	0	7	0.0	0.0	7	0	125	0	M	PS	05/31/74	06/09/94		
SX-112	NCPLX	ASMD LKR	IS/IP	92	0	3	0.0	0.0	3	0	92	0	P	M	04/28/82	03/10/87		
SX-113	NCPLX	ASMD LKR	IS/IP	26	0	0	0.0	0.0	0	0	26	0	P	M	04/28/82	03/18/88		
SX-114	NCPLX	ASMD LKR	IS/IP	181	0	14	0.0	0.0	14	0	181	0	P	M	04/28/82	02/26/87		
SX-115	NCPLX	ASMD LKR	IS/IP	12	0	0	0.0	0.0	0	0	12	0	P	M	04/28/82	03/31/88		
15 SINGLE-SHELL TANKS			TOTALS:	4315	163	1304	34.4	279.7	1491	1389	1310	2842						
								T TANK FARM STATUS										
T-101	NCPLX	ASMD LKR	IS/PI	102	1	16	0.0	25.3	17	0	101	0	F	S	04/14/93	04/07/93		
T-102	NCPLX	SOUND	IS/IP	32	13	0	0.0	0.0	13	13	19	0	P	FP	08/31/84	06/28/89		(h)
T-103	NCPLX	ASMD LKR	IS/IP	27	4	0	0.0	0.0	4	0	23	0	F	FP	11/29/83	07/03/84		
T-104	NCPLX	SOUND	/PI	326	0	31	0.0	147.6	31	25	326	0	P	MP	04/30/99	06/29/89		(c)(e)
T-105	NCPLX	SOUND	IS/IP	98	0	23	0.0	0.0	23	17	98	0	P	F	05/29/87	05/14/87		
T-106	NCPLX	ASMD LKR	IS/IP	21	2	0	0.0	0.0	2	0	19	0	P	FP	04/28/82	06/29/89		
T-107	NCPLX	ASMD LKR	IS/PI	173	0	22	0.0	11.0	22	12	173	0	P	FP	05/31/96	07/12/84	05/09/96	
T-108	NCPLX	ASMD LKR	IS/IP	44	0	0	0.0	0.0	0	0	44	0	P	M	04/28/82	07/17/84		

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
T-109	NCPLX	ASMD LKR	IS/IP	58	0	0	0.0	0.0	0	0	58	0	M	M	12/30/84	02/25/93		
T-110	NCPLX	SOUND	/PI	350	0	35	0.0	46.1	35	29	350	0	P	FP	04/30/99	07/12/84		(d)(e)
T-111	NCPLX	ASMD LKR	IS/PI	446	0	34	0.0	9.6	34	29	446	0	P	FP	04/18/94	04/13/94	02/13/95	
T-112	NCPLX	SOUND	IS/IP	67	7	0	0.0	0.0	7	7	60	0	P	FP	04/28/82	08/01/84		(h)
T-201	NCPLX	SOUND	IS/IP	29	1	3	0.0	0.0	4	0	28	0	M	PS	05/31/78	04/15/86		
T-202	NCPLX	SOUND	IS/IP	21	0	2	0.0	0.0	2	0	21	0	FP	P	07/12/81	07/06/89		
T-203	NCPLX	SOUND	IS/IP	35	0	4	0.0	0.0	4	0	35	0	M	PS	01/31/78	08/03/89		
T-204	NCPLX	SOUND	IS/IP	38	0	4	0.0	0.0	4	0	38	0	FP	P	07/22/81	08/03/89		
16 SINGLE-SHELL TANKS			TOTALS:	1867	28	174	0.0	239.6	202	132	1839	0						

TX TANK FARM STATUS

TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
TX-101	NCPLX	SOUND	IS/IP/CCS	87	3	2	0.0	0.0	5	0	84	0	F	P	02/02/84	10/24/85		
TX-102	NCPLX	SOUND	IS/IP/CCS	217	0	22	0.0	94.4	22	0	0	217	M	S	08/31/84	10/31/85		
TX-103	NCPLX	SOUND	IS/IP/CCS	157	0	15	0.0	68.3	15	0	157	0	F	S	08/14/80	10/31/85		
TX-104	NCPLX	SOUND	IS/IP/CCS	65	1	14	0.0	3.6	15	0	0	64	F	FP	04/06/84	10/16/84		
TX-105	NCPLX	ASMD LKR	IS/IP/CCS	609	0	20	0.0	121.5	20	0	0	609	M	PS	08/22/77	10/24/89		
TX-106	NCPLX	SOUND	IS/IP/CCS	453	0	10	0.0	134.6	10	0	0	453	M	S	08/29/77	10/31/85		
TX-107	NCPLX	ASMD LKR	IS/IP/CCS	36	1	1	0.0	0.0	2	0	0	35	FP	FP	01/20/84	10/31/85		
TX-108	NCPLX	SOUND	IS/IP/CCS	134	0	0	0.0	13.7	0	0	0	134	P	FP	05/30/83	09/12/89		
TX-109	NCPLX	SOUND	IS/IP/CCS	384	0	10	0.0	72.3	10	0	0	384	F	PS	05/30/83	10/24/89		
TX-110	NCPLX	ASMD LKR	IS/IP/CCS	462	0	15	0.0	115.1	15	0	0	462	M	PS	05/30/83	10/24/89		
TX-111	NCPLX	SOUND	IS/IP/CCS	370	0	9	0.0	98.4	9	0	0	370	M	PS	07/26/77	09/12/89		
TX-112	NCPLX	SOUND	IS/IP/CCS	649	0	24	0.0	94.0	24	0	0	649	P	PS	05/30/83	11/19/87		
TX-113	NCPLX	ASMD LKR	IS/IP/CCS	607	0	16	0.0	19.2	16	0	0	607	M	PS	05/30/83	04/11/83	09/23/94	
TX-114	NCPLX	ASMD LKR	IS/IP/CCS	535	0	15	0.0	104.3	15	0	0	535	M	PS	05/30/83	04/11/83	02/17/95	
TX-115	NCPLX	ASMD LKR	IS/IP/CCS	640	0	19	0.0	99.1	19	0	0	640	M	S	03/25/83	06/15/88		
TX-116	NCPLX	ASMD LKR	IS/IP/CCS	631	0	23	0.0	23.8	23	0	0	631	M	PS	03/31/72	10/17/89		
TX-117	NCPLX	ASMD LKR	IS/IP/CCS	626	0	8	0.0	54.3	8	0	0	626	M	PS	12/31/71	04/11/83		
TX-118	NCPLX	SOUND	IS/IP/CCS	347	0	27	0.0	89.1	27	0	0	347	F	S	11/17/80	12/19/79		
18 SINGLE-SHELL TANKS			TOTALS:	7009	5	250	0.0	1205.7	255	0	241	6763						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUM		VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								TY TANK FARM STATUS										
TY-101	NCPLX	ASMD LKR	IS/IP/CCS	118	0	0	0.0	8.2	0	0	118	0	P	F	04/28/82	08/22/89		
TY-102	NCPLX	SOUND	IS/IP/CCS	64	0	14	0.0	6.6	14	0	0	64	P	FP	06/28/82	07/07/87		
TY-103	NCPLX	ASMD LKR	IS/IP/CCS	162	0	5	0.0	11.5	5	0	162	0	P	FP	07/09/82	08/22/89		
TY-104	NCPLX	ASMD LKR	IS/IP/CCS	46	3	12	0.0	0.0	15	0	43	0	P	FP	06/27/90	11/03/87		
TY-105	NCPLX	ASMD LKR	IS/IP/CCS	231	0	0	0.0	3.6	0	0	231	0	P	M	04/28/82	09/07/89		
TY-106	NCPLX	ASMD LKR	IS/IP/CCS	17	0	0	0.0	0.0	0	0	17	0	P	M	04/28/82	08/22/89		
6 SINGLE-SHELL TANKS			TOTALS:	638	3	31	0.0	29.9	34	0	571	64						
								U TANK FARM STATUS										
U-101	NCPLX	ASMD LKR	IS/IP	25	3	0	0.0	0.0	3	0	22	0	P	MP	04/28/82	06/19/79		
U-102	NCPLX	SOUND	/PI	375	18	157	0.0	0.0	175	168	43	314	P	MP	12/31/98	06/08/89		(e)
U-103	NCPLX	SOUND	/PI	468	13	216	0.0	0.0	229	218	12	443	P	FP	12/31/98	09/13/88		(e)
U-104	NCPLX	ASMD LKR	IS/IP	122	0	7	0.0	0.0	7	0	122	0	P	MP	04/28/82	08/10/89		
U-105	NCPLX	SOUND	/PI	418	37	173	0.0	0.0	210	204	32	349	FM	PS	12/31/98	07/07/88		(e)
U-106	NCPLX	SOUND	/PI	226	15	97	0.0	0.0	112	98	0	211	F	PS	12/31/98	07/07/88		(e)
U-107	DSSF	SOUND	/PI	406	31	175	0.0	0.0	206	196	15	360	F	S	12/31/98	10/27/88		(e)
U-108	NCPLX	SOUND	/PI	468	24	205	0.0	0.0	229	223	29	415	F	S	12/31/98	09/12/84		(e)
U-109	NCPLX	SOUND	/PI	465	19	203	0.0	0.0	222	216	35	411	F	F	05/31/99	07/07/88		(e)(j)
U-110	NCPLX	ASMD LKR	IS/PI	186	0	25	0.0	0.0	25	19	186	0	M	M	12/30/84	12/11/84		(h)
U-111	DSSF	SOUND	/PI	329	0	149	0.0	0.0	149	142	26	303	PS	FPS	12/31/98	06/23/88		(e)
U-112	NCPLX	ASMD LKR	IS/IP	49	4	0	0.0	0.0	4	0	45	0	P	MP	02/10/84	08/03/89		
U-201	NCPLX	SOUND	IS/IP	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79	08/08/89		
U-202	NCPLX	SOUND	IS/IP	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79	08/08/89		
U-203	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79	06/13/89		
U-204	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79	06/13/89		
16 SINGLE-SHELL TANKS			TOTALS:	3553	168	1407	0.0	0.0	1575	1484	579	2806						
GRAND TOTAL				34966	1540	6095	81.4	4744.6	7555	6396	11925	21501						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

Total Waste is calculated as the sum of Sludge and Saltcake plus Supernate.

The category "Interim Isolated" (II) was changed to "Intrusion Prevention" (IP) in June 1993. See section C. "Tank and Equipment Code and Status Definitions."

Stabilization information from WHC-SD-RE-TI-178 SST STABILIZATION RECORD, latest revision, or SST Stabilization or Cognizant Engineer

(a) SX-104 Following information from Cognizant Engineer

Several transfers to SY-102 were performed during May 1999. The cross-site transfer performed from April 1 to 9 impacted saltwell pumping.
Volumes reported are based on Best-Basis Inventory Control values and will be udated annually as pumping data accumulates.

Total Waste: 584 Kgal
Supernate: 0 Kgal
Drainable Interstitial: 131.9 Kgal
Pumped this month: 17.1 Kgal
Total Pumped: 221.1 Kgal
Drainable Liquid Remaining: 131.9 Kgal
Pumpable Liquid Remaining: 123.9 Kgal
Sludge: 136 Kgal
Saltcake: 448 Kgal

Pumping during May 1999 required 23,971 gal of dilution water and 3,201 gal of water for transfer line flushes. A total of 18,370 gal of waste was removed from the tank, and a total of 1,196 gal of water was added by pump priming and equipment flushes for a net removal of 17,174 gal of waste.
The porosity of the waste seems to be quite a bit higher than before.

(b) SX-106 Following information from Cognizant Engineer

Several transfers to SY-102 were performed during May 1999.
Volumes reported are based on Best-Bassis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 479.4 Kgal
Supernate: 163.4 Kgal
Drainable Interstitial: 109 Kgal
Pumped this month: 17.3 Kgal
Total Pumped: 58.6 Kgal
Drainable Liquid Remaining: 296.4 Kgal
Pumpable Liquid Remaining: 289.4 Kgal
Sludge: 52 Kgal
Saltcake: 264 Kgal

Pumping during May 1999 required 14,760 gal of dilution water and 2,888 gal of water for transfer line flushes. A total of 18,049 gal of waste was removed from the tank, and a total of 714 gal of flush water was added by pump priming and equipment flushes, for a net removal of 17,335 gal of waste.

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(c) T-104 Following Information from Cognizant Engineer

Pumping resumed June 7, 1998. No pumping in February 1999; pumping resumed March 24. No pumping was done in May 1999.
Volumes reported are based on Best-Basis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 326 Kgal
Supernate: 0 Kgal
Drainable Interstitial: 30.6 Kgal
Pumped this month: 0.0 Kgal
Total Pumped: 147.6 Kgal
Drainable Liquid Remaining: 30.6 Kgal
Pumpable Liquid Remaining: 24.6 Kgal
Sludge: 326 Kgal
Saltcake: 0 Kgal

Actual volume of liquid remaining to be pumped is still a rough estimate. A review of tank pumping and level data indicates >50,000 gal pumpable liquid remaining. No pumping was done in May 1999. Pumping operations were disrupted in April by valve and/or DOV problems which resulted in inability to maintain minimum saltwell fluid level and required pumping flow rate. Repair and modified pumping operations are being investigated.

(d) T-110 Following Information from Cognizant Engineer

Pumping began May 21, 1997. No pumping in February 1999; pumping resumed in March. No pumping done in May 1999.
Volumes reported are based on Best-Basis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 350 Kgal
Supernate: 0 Kgal
Drainable Interstitial: 35.1 Kgal
Pumped this month: 0.0 Kgal
Total Pumped: 46.1 Kgal
Drainable Liquid Remaining: 35.1 Kgal
Pumpable Liquid Remaining: 29.1 Kgal
Sludge: 350 Kgal
Saltcake: 0 Kgal

Actual volume of liquid remaining to be pumped is still a rough estimate. Dome elevation survey performed on October 27, 1998. Between October 27 and April 28, 1999, 9,875 gal of actual waste has been pumped.
No pumping done in May 1999.

(e) Volume estimates for the remaining 29 SSTs (excluding C-106) not yet interim stabilized were revised per HNF-2978, "Updated Jet Pump Durations for Interim Stabilization of Remaining Single-Shell Tanks," Rev. 0, R. D. Schrieber, dated July 15, 1998. This included supernate, saltcake, sludge, drainable liquid remaining, drainable interstitial liquid, and pumpable liquid remaining. Volume estimates were again revised for Drainable Interstitial Liquid in these tanks per Rev.0 updated March 24, 1999.

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(f) S-102 Following information from Cognizant Engineer

Pumping commenced March 18, 1999. The waste is pumped directly to SY-102. Plugging problems began in April and continued into May, until the foot valve and jet pump were plugged up. The plan is to replace the applicable piping during the second week of June.

Total Waste: 549
Supernate: 0 Kgal
Drainable Interstitial: 200.3 Kgal
Pumped this month: 1.9 Kgal
Total Pumped: 29.7 Kgal
Drainable Liquid Remaining: 200.3 Kgal
Pumpable Liquid Remaining: 194.3 Kgal
Sludge: 105 Kgal
Saltcake: 444 Kgal

Pumping during May 1999 required 3,359 gal of dilution water and 1,358 gal of water for transfer line flushes. A total of 3,284 gal of waste was removed from the tank, and a total of 1,376 gal of water was added by pump priming and equipment flushes for a net removal of 1,908 gal of waste.

(g) S-106 Following information from Cognizant Engineer

Pumping commenced on April 15, 1999. The waste is pumped directly to SY-102.

Total Waste: 426 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 141.6 Kgal
Pumped this Month: 45.1 Kgal
Total Pumped: 168.9 Kgal
Drainable Liquid Remaining: 141.6 Kgal
Pumpable Liquid Remaing: 126.6 Kgal
Sludge: 0 Kgal
Saltcake: 426 Kgal

A total of 45,997 gal of fluid was removed from the tank and a total of 533 gal of water was added by pump priming and equipment flushes, for a net removal of 45,464 gal of of tank waste in May 1999. In addition, 798 gal of water was used for transfer line flushes.

(h) Tank B-104 - DIL, DLR and PLR volumes were changed per WHC-SD-WM-ER-622, dated September 1996.
Tanks B-110, B-111 and U-110 - DIL, DLR and PLR volumes were recalculated to reflect the change in porosity from 16% to 21%.
Tanks BX-103, T-102 and T-112 no longer meet the supernatant criteria for interim stabilization. An evaluation in 1996 indicated no further pumping be performed in these tanks.
Supernatant volumes have been changed in BX-103; no changes were made in the volumes in T-102 and T-112.

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

May 31, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(I) C-106 Following information from WRSS Design Authority

Sluicing in this tank commenced November 18, 1998.

Total Waste: 166.0 Kgal
Supernate: 71.0 Kgal
Drainable Interstitial Liquid: 6.1 Kgal
Drainable Liquid Remaining: 77.1 Kgal
Pumpable Liquid Remaining: 72.1 Kgal
Sludge: 95.0 Kgal
Saltcake: 0.0 Kgal

These liquid and solids volumes are preliminry and will continue to change as WRSS sluicing operations continue.

(J) U-109 Following information from Chairman, Best-Basis Inventory Change Control.

Total Waste: 465 Kgal (from 463 Kgal)
Supernate: 19 Kgal (no change)
Sludge: 35 Kgal (no change)
Saltcake: 411 Kgal (from 409 Kgal)

The changes were made based on recent core sampling information and historical surveillance measurements.

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APPENDIX F

PERFORMANCE SUMMARY

TABLE F-1. PERFORMANCE SUMMARY (Sheet 1 of 2)

WASTE VOLUMES (Kgallons)

May 31, 1999

INCREASES/DECREASES IN WASTE VOLUMES STORED IN DOUBLE-SHELL TANKS

SOURCE		THIS MONTH	FY1999 TO DATE
B PLANT		0	0
PUREX TOTAL (1)		0	0
PFP (1)		0	0
T PLANT (1)		0	0
S PLANT (1)		1	2
300 AREAS (1)		0	0
400 AREAS (1)		0	0
SULFATE WASTE -100 N (2)		0	0
C-106 SOLIDS (INCLUDING FLUSH)		9	59
TRAINING/X-SITE (9)		0	62
TANK FARMS (6)		6	38
SALTWELL LIQUID (8)		141	595
OTHER GAINS		6	101
Slurry increase (3)	1		
Condensate	0		
Instrument change (7)	5		
Unknown (5)	0		
OTHER LOSSES		-12	-101
Slurry decrease (3)	-1		
Evaporation (4)	-4		
Instrument change (7)	-3		
Unknown (5)	-4		
EVAPORATED		0	0
GROUTED		0	0
TOTAL		151	756

CUMULATIVE EVAPORATION - 1950 TO PRESENT WASTE VOLUME REDUCTION

FACILITY		
242-B EVAPORATOR (10)		7172
242-T EVAPORATOR (1950's) (10)		9181
IN-TANK SOLIDIFICATION UNIT 1 (10)		11876
IN-TANK SOLIDIFICATION UNIT 2 (10)		15295
IN-TANK SOLID. UNIT 1 & 2 (10)		7965
(after conversion of Unit 1 to a cooler for Unit 2)		8833
242-T (Modified) (10)		24471
242-S EVAPORATOR (10)		41983
242-A EVAPORATOR (11)		73689
242-A Evaporator was restarted April 15, 1994, after having been shut down since April 1989.		
Total waste reduction since restart:		9486
Campaign 94-1	2417 Kgal	
Campaign 94-2	2787 Kgal	
Campaign 95-1	2161 Kgal	
Campaign 96-1	1117 Kgal	
Campaign 97-1	351 Kgal	
Campaign 97-2	653 Kgal	

TABLE F-1. PERFORMANCE SUMMARY
(Sheet 2 of 2)

Footnotes:

INCREASES/DECREASES IN WASTE VOLUMES

(1) Including flush

(2) Sulfate waste is generated from ion exchange backflushing and sand filter clean out, resulting in sulfate waste.

(3) Slurry increase/growth is caused by gas generation within the waste.

(4) Aging waste tanks

(5) Unknown waste gains or losses

(6) Includes Tank Farms miscellaneous flushes

(7) Liquid level measurement instrument changes from the automatic FIC to manual tape (and vice versa) result in unusual gains or losses because the manual tape may rest on an uneven crust surface giving a different reading from that of the automatic FIC.

(8) Results from pumping of single-shell tanks to double-shell tanks.

(9) Tracks waste being sent to the double-shell tanks from the "Precampaign Training Run." Evaporator procedures require a training run at least once per year. This also includes pressure testing and flushing of cross-site transfer lines.

WASTE VOLUME REDUCTION

(10) Currently inoperative.

(11) Currently operative. The 242-A Evaporator-Crystallizer was started up March 1977, and shut down April 1989 because of regulatory issues, and remained shut down for subsequent upgrading. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals (forming saltcake). The evaporator was restarted on April 15, 1994.

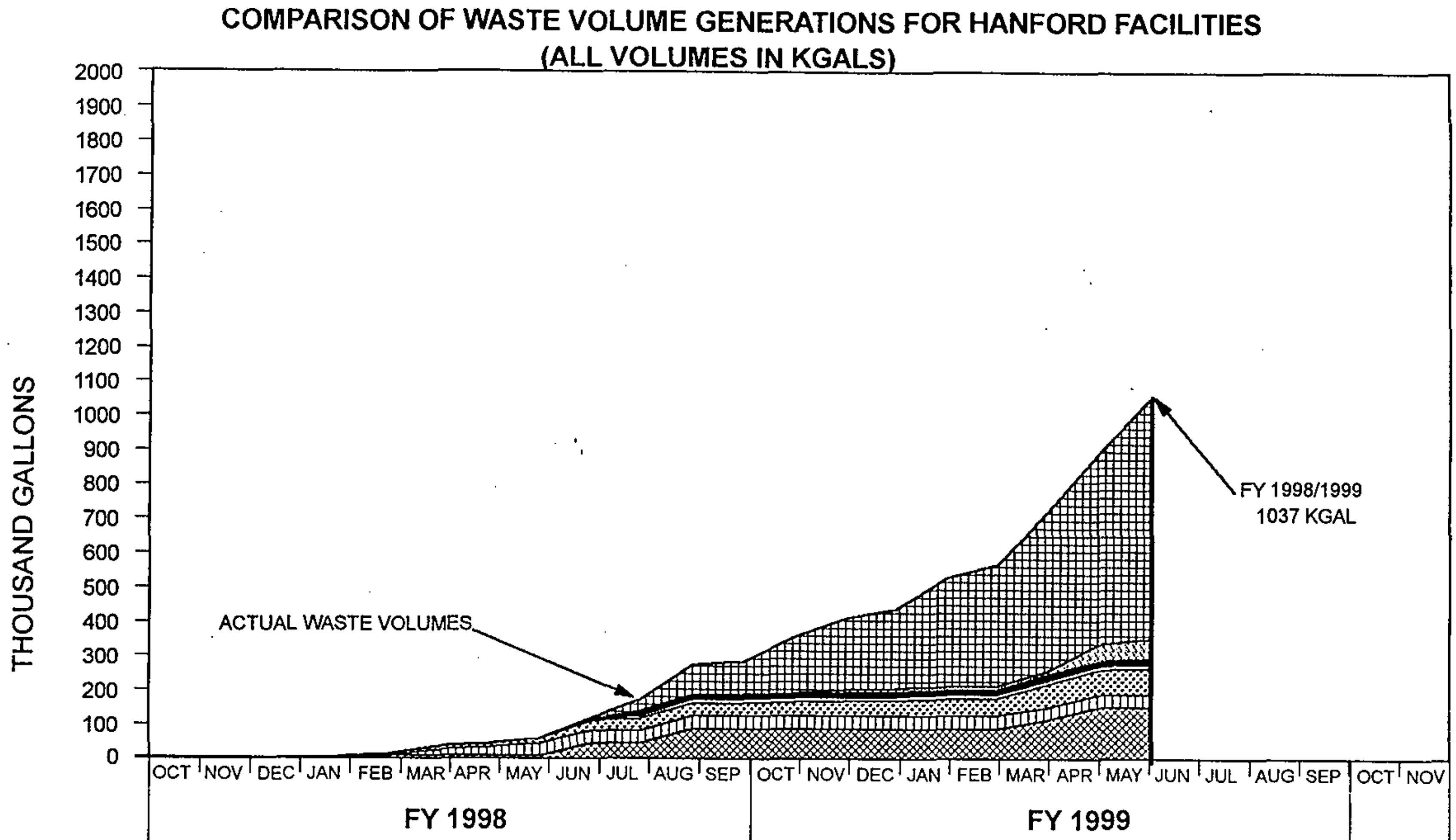
TABLE F-2. SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANKS

- The DST system received waste transfers/additions from SST Stabilization, 222S (Labs) and Tank Farms in May.
- There was a net change of +151 Kgals in the DST system for May 1999.
- The total DST inventory as of May 31, 1999 was 19,354 Kgals.
- There was no Saltwell Liquid (SWL) pumped to the East Area DSTs in May.
- There was ~141 Kgals of Saltwell Liquid (SWL) pumped to the West Area DSTs (102-SY) in May.
- The SWL numbers are preliminary and are subject to change once cognizant Engineers do a validation, the volumes reported contain actual waste volume plus any water added for dilution and transfer line flushes.
- Tank 102-AY received ~9 Kgals of solids from Tank 106-C in May. This brings the total solids transferred from Tank 106-C to ~88 Kgals.
- The volume of solids transferred from Tank 106-C to Tank 102-AY are preliminary and will be adjusted once settling and engineering evaluations are completed.
- ~262 Kgals of complexed waste was transferred from Tank 106-AW to Tank 103-AP in May, in support of Evaporator Campaign 99-1.

MAY 1999 DST WASTE RECEIPTS					
FACILITY GENERATIONS		OTHER GAINS ASSOCIATED WITH		OTHER LOSSES ASSOCIATED WITH	
SWL (West)	+141 Kgal (2SY)	SLURRY	+1 Kgal	SLURRY	-1 Kgal
Tank Farms	+6 Kgal (2AY, 1AZ, 1SY, 2AW)	CONDENSATE	+0 Kgal	CONDENSATE	-4 Kgal
106-C Solids	+9 Kgal (2AY)	INSTRUMENTATION	+5 Kgal	INSTRUMENTATION	-3 Kgal
222S (Labs)	+1 Kgal (2SY)	UNKNOWN	+0 Kgal	UNKNOWN	-4 Kgal
TOTAL	+157 Kgal	TOTAL	+6 Kgal	TOTAL	-12 Kgal

	ACTUAL DST WASTE RECEIPTS	PROJECTED DST WASTE RECEIPTS	MISC. DST CHANGES (+/-)	WVR	NET DST CHANGE	TOTAL DST VOLUME
OCT98	73	81	4	0	77	18675
NOV98	52	115	17	0	69	18744
DEC98	26	57	-20	0	6	18750
JAN99	89	122	5	0	94	18844
FEB99	40	74	3	0	43	18887
MAR99	151	135	-8	0	143	19030
APR99	168	128	5	0	173	19203
MAY99	157	154	-6	0	151	19354
JUN99		-686		0		
JUL99		177		0		
AUG99		127		0		
SEP99		149		0		

NOTE: The "PROJECTED DST WASTE RECEIPTS" numbers were updated in December 1998. The Evaporator campaign was rescheduled to June in April 1999



	FY 1998												FY 1999													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
SWL WEST	0	0	0	0	0	0	0	0	7	28	53	9	69	42	22	84	40	108	89	141						
SWL EAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
100 AREA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
PFP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
106-C	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	39	9						
3/400 AREA	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0						
S PLANT	0	0	0	0	0	0	0	0	3	3	4	1	0	0	0	0	0	1	0	1						
T PLANT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
TANK FARMS	0	0	0	4	2	4	1	3	14	10	0	1	4	1	2	5	0	16	4	6						
B PLANT	0	0	0	0	0	18	8	11	0	0	0	0	0	0	0	0	0	0	0	0						
PUREX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
OTHER	0	0	0	0	5	0	0	0	35	0	44	0	0	0	0	0	0	26	36	0						

NOTE: The Other Category is for Waste Generations from, Evaporator Tranining, Pressure Tests, Cross-Site Transfers

FACILPAC

FIGURE F-1. COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES
(All volumes in Kgals)

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APPENDIX G

MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES

TABLE G-1. EAST AND WEST AREA MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES

ACTIVE - still running transfers through the associated diversion boxes or pipeline encasements

May 31, 199

FACILITY	LOCATION	PURPOSE (receives waste from:)	(Gallons)	MONITORED BY	REMARKS
EAST AREA					
241-A-302-A	A Farm	A-151 DB	952	SACS/ENRAF/Manually	Foamed over Catch Tank pump pit & div. box to prevent intrusion
241-ER-311	B Plant	ER-151, ER-152 DB	7422	SACS/FIC/Manually	Rain
241-AX-152	AX Farm	AX-152 DB	0	SACS/MT	Pumped 11/98
241-AZ-151	AZ Farm	AZ-702 condensate	7888	SACS/FIC/Manually	Volume changes daily - pumped to AZ-102 as needed
241-AZ-154	AZ Farm		25	SACS/MT	
244-BX-TK/SMP	BX Complex	DCRT - Receives from several farms	25229	SACS/MT	Using Manual Tape for tank/sump, will be pumped 5/21/99
244-A-TK/SMP	A Complex	DCRT - Receives from several farms	3192	MCS/SACS/WTF	WTF- pumped 3/99 to AP-108
A-350	A Farm	Collects drainage	360	MCS/SACS/WTF	WTF (uncorrected) pumped as needed
AR-204	AY Farm	RR Cars during transfer to rec. tanks	400	DIP TUBE	Alarms on SACS
A-417	A Farm		11757	SACS/WTF	WTF (uncorrected) pumped 4/98
CR-003-TK/SUMP	C Farm	DCRT	3819	MT/ZIP CORD	Zip cord in sump O/S 3/11/96, water intrusion, 1/98
WEST AREA					
241-TX-302-C	TX Farm	TX-154 DB	176	SACS/ENRAF/Manually	
241-U-301-B	U Farm	U-151, U-152, U-153, U-252 DB	8101	SACS/ENRAF/Manually	Returned to service 12/30/93
241-UX-302-A	U Plant	UX-154 DB	2255	SACS/ENRAF/Manually	
241-S-304	S Farm	S-151 DB	130	SACS/ENRAF/Manually	Replaced S-302-A, 10/91; ENRAF installed 7/98 Sump not alarming.
244-S-TK/SMP	S Farm	DCRT - Receives from several farms	15134	SACS/Manually	WTF (uncorrected)
244-TX-TK/SMP	TX Farm	DCRT - Receives from several farms	13913	SACS/Manually	MT
Vent Station Catch Tank		Cross Country Transfer Line	342	SACS/Manually	MT

Total Active Facilities 18

LEGEND:
- DB - Diversion Box
- DCRT - Double-Contained Receiver Tank
- TK - Tank
- SMP - Sump
- FIC - Food Instrument Corporation measurement device
- MT - Manual Tape
- Zip Cord - surface level measurement device
- WTF - Weight Time Factor - can be recorded as WTF, CWF (corrected), and Uncorrected WTF
- SACS - Surveillance Automated Control System
- MCS - Monitor and Control System
- O/S - Out of Service
- ENRAF - Surface Level Measuring Device

TABLE G-2. EAST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers

May 31, 1999

FACILITY	LOCATION	RECEIVED WASTE FROM:	(Gallons)	MONITORED BY	REMARKS
216-BY-201	BY Farm	TBP Waste Line	Unknown	NM	(216-BY)
241-A-302-B	A Farm	A-152 DB	5681	SACS/MT	Isolated 1985, Project B-138 Interim Stabilized 1990, Rain intrusion
241-AX-151	N of PUREX	PUREX	Unknown	NM	Isolated 1985
241-B-301-B	B Farm	B-151, B-152, B-153, B-252 DB	22250	NM	Isolated 1985 (1)
241-B-302-B	B Farm	B-154 DB	4930	NM	Isolated 1985 (1)
241-BX-302-A	BX Farm	BR-152, BX-153, BXR-152, BYR-152 DB	840	NM	Isolated 1985 (1)
241-BX-302-B	BX Farm	BX-154 DB	1040	NM	Isolated 1985 (1)
241-BX-302-C	BX Farm	BX-155 DB	870	NM	Isolated 1985 (1)
241-C-301-C	C Farm	C-151, C-152, C-153, C-252 DB	10470	NM	Isolated 1985 (1)
241-CX-70	Hot Semi-	Transfer lines	Unknown	NM	Isolated, Decommission Project,
241-CX-72	Works	Transfer lines	650	NM	See Dwg H-2-95-501, 2/5/87
241-ER-311A	SW B Plant	ER-151 DB	Unknown	NM	Isolated
244-AR VAULT	A Complex	Between farms & B-Plant	Unknown	NM	Not actively being used. Systems activated for final clean-out.
244-BXR-TK/SMP-001	BX Farm	Transfer lines	7200	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-002	BX Farm	Transfer lines	2180	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-003	BX Farm	Transfer lines	1810	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-011	BX Farm	Transfer lines	7100	NM	Interim Stabilization 1985 (1)
361-B-TANK	B Plant	Drainage from B-Plant	Unknown	NM	Interim Stabilization 1985 (1)

Total East Area inactive facilities 18

LEGEND:
DB - Diversion Box
DCRT - Double-Contained Receiver Tank
MT - Manual Tape
SACS - Surveillance Automated Control System
TK - Tank
SMP - Sump
R - Usually denotes replacement
NM - Not Monitored

(1) SOURCE: WASTE STORAGE TANK STATUS & LEAK DETECTION CRITERIA document

TABLE G-3. WEST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers

May 31, 1999

FACILITY	*LOCATION*	*RECEIVED WASTE FROM:*	*(Gallons)*	*MONITORED BY*	*REMARKS*
216-TY-201	E. of TY Farm	Supernate from T-112	Unknown	NM	Isolated
231-W-151-001	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
231-W-151-002	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
240-S-302	S Farm	240-S-151 DB	8479	SACS/ENRAF	Assumed Leaker EPDA 85-04
241-S-302-A	S Farm	241-S-151 DB	0	SACS/FIC *	Assumed Leaker TF-EFS-90-042
			* FIC in Intrusion mode		Partially filled with grout 2/91, determined still assumed leaker after leak test
241-S-302-B	S Farm	S Encasements	Unknown	NM	Isolated 1985 (1)
241-SX-302	SX Farm	SX-151 DB, 151 TB	Unknown	NM	Isolated 1987
241-SX-304	SX Farm	SX-152 Transfer Box, SX-151 DB	Unknown	NM	Isolated 1985 (1)
241-T-301	T Farm	DB T-151, -151, -153, -252	Unknown	NM	Isolated 1985 (241-T-301B)
241-TX-302	TX Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TX-302-X-B	TX Farm	TX Encasements	Unknown	NM	Isolated 1985 (1)
241-TX-302-B	TX Farm	TX-155 DB	1600	SACS/MT	New MT installed 7/16/93
241-TX-302B(R)	E. of TX Farm	TX-155 DB	Unknown	NM	Isolated
241-TY-302-A	TY Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TY-302-B	TY Farm	TY Encasements	Unknown	NM	Isolated 1985 (1)
241-Z-8	E. of Z Plant	Recuplex waste	Unknown	NM	Isolated, 1974, 1975
242-T-135	T Evaporator	T Evaporator	Unknown	NM	Isolated
242-TA-R1	T Evaporator	Z Plant waste	Unknown	NM	Isolated
243-S-TK-1	N. of S Farm	Pers. Decon. Facility	Unknown	NM	Isolated
244-U-TK/SMP	U Farm	DCRT - Receives from several farms	Unknown	NM	Not yet in use
244-TXR VAULT	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-001	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-002	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-003	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
270-W	SE of U Plant	Condensate from U-221	Unknown	NM	Isolated 1970
361-T-TANK	T Plant	Drainage from T-Plant	Unknown	NM	Isolated 1985 (1)
361-U-TANK	U Plant	Drainage from U-Plant	Unknown	NM	Interim Stabilzed, MT removed 1984 (1)

Total West Area inactive facilities 27

LEGEND:
- DB - Diversion Box, TB - Transfer Box
- DCRT - Double-Contained Receiver Tank
- TK - Tank
- SMP - Sump
- R - Usually denotes replacement
- FIC - Surface Level Monitoring Device
- MT - Manual Tape
- O/S - Out of Service
- SACS - Surveillance Automated Control System
- NM - Not Monitored
- ENRAF - Surface Level Monitoring Device

(1) SOURCE: WASTE STORAGE TANK STATUS & LEAK DETECTION CRITERIA document

APPENDIX H

LEAK VOLUME ESTIMATES

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES (Sheet 1 of 5)

May 31, 1999

Tank Number	Date Declared Confirmed or Assumed Leaker (3)	Volume Gallons (2)(4)	Associated KiloCuries 137 cs (10)	Interim Stabilized Date (12)	Leak Estimate Updated	Leak Estimate Reference
241-A-103	1987	5500 (9)		06/88	1987	(j)
241-A-104	1975	500 to 2500	0.8 to 1.8 (q)	09/78	1983	(a)(q)
241-A-105 (1)	1963	10000 to 277000	85 to 760 (b)	07/79	1991	(b)(c)
241-AX-102	1988	3000 (9)		09/88	1989	(h)
241-AX-104	1977	-- (7)		08/81	1989	(g)
241-B-101	1974	-- (7)		03/81	1989	(g)
241-B-103	1978	-- (7)		02/85	1989	(g)
241-B-105	1978	-- (7)		12/84	1989	(g)
241-B-107	1980	8000 (9)		03/85	1986	(d)(f)
241-B-110	1981	10000 (9)		03/85	1986	(d)
241-B-111	1978	-- (7)		06/85	1989	(g)
241-B-112	1978	2000		05/85	1989	(g)
241-B-201	1980	1200 (9)		08/81	1984	(e)(f)
241-B-203	1983	300 (9)		06/84	1986	(d)
241-B-204	1984	400 (9)		06/84	1989	(g)
241-BX-101	1972	-- (7)		09/78	1989	(g)
241-BX-102	1971	70000	50 (l)	11/78	1986	(d)
241-BX-108	1974	2500	0.5 (l)	07/79	1986	(d)
241-BX-110	1976	-- (7)		08/85	1989	(g)
241-BX-111	1984 (14)	-- (7)		03/95	1993	(g)(r)
241-BY-103	1973	<5000		11/97	1983	(a)
241-BY-105	1984	-- (7)		N/A	1989	(g)
241-BY-106	1984	-- (7)		N/A	1989	(g)
241-BY-107	1984	15100 (9)		07/79	1989	(g)
241-BY-108	1972	<5000		02/85	1983	(a)
241-C-101	1980	20000 (9)(11)		11/83	1986	(d)
241-C-110	1984	2000		05/95	1989	(g)
241-C-111	1968	5500 (9)		03/84	1989	(g)
241-C-201 (5)	1988	550		03/82	1987	(i)
241-C-202 (5)	1988	450		08/81	1987	(i)
241-C-203	1984	400 (9)		03/82	1986	(d)
241-C-204 (5)	1988	350		09/82	1987	(i)
241-S-104	1968	24000 (9)		12/84	1989	(g)
241-SX-104	1988	6000 (9)		N/A	1988	(k)
241-SX-107	1964	<5000		10/79	1983	(a)
241-SX-108 (6)(15)	1962	2400 to 35000	17 to 140 (m)(q)(u)	08/79	1991	(m)(q)(u)
241-SX-109 (6)(15)	1965	<10000	<40 (n)(u)	05/81	1992	(n)(u)
241-SX-110	1976	5500 (9)		08/79	1989	(g)
241-SX-111 (15)	1974	500 to 2000	0.6 to 2.4 (l)(q)(u)	07/79	1986	(d)(q)(u)
241-SX-112 (15)	1969	30000	40 (l)(u)	07/79	1986	(d)(u)
241-SX-113	1962	15000	8 (l)	11/78	1986	(d)
241-SX-114	1972	-- (7)		07/79	1989	(g)
241-SX-115	1965	50000	21 (o)	09/78	1992	(o)
241-T-101	1992	7500 (9)		04/93	1992	(p)
241-T-103	1974	<1000 (9)		11/83	1989	(g)
241-T-106	1973	115000 (9)	40 (l)	08/81	1986	(d)
241-T-107	1984	-- (7)		05/96	1989	(g)
241-T-108	1974	<1000 (9)		11/78	1980	(f)
241-T-109	1974	<1000 (9)		12/84	1989	(g)
241-T-111	1979, 1994 (13)	<1000 (9)		02/95	1994	(f)(t)
241-TX-105	1977	-- (7)		04/83	1989	(g)
241-TX-107 (6)	1984	2500		10/79	1986	(d)
241-TX-110	1977	-- (7)		04/83	1989	(g)
241-TX-113	1974	-- (7)		04/83	1989	(g)
241-TX-114	1974	-- (7)		04/83	1989	(g)
241-TX-115	1977	-- (7)		09/83	1989	(g)
241-TX-116	1977	-- (7)		04/83	1989	(g)
241-TX-117	1977	-- (7)		03/83	1989	(g)
241-TY-101	1973	<1000 (9)		04/83	1980	(f)
241-TY-103	1973	3000	0.7 (l)	02/83	1986	(d)
241-TY-104	1981	1400 (9)		11/83	1986	(d)
241-TY-105	1960	35000	4 (l)	02/83	1986	(d)
241-TY-106	1959	20000	2 (l)	11/78	1986	(d)
241-U-101	1959	30000	20 (l)	09/79	1986	(d)
241-U-104	1961	55000	0.09 (l)	10/78	1986	(d)
241-U-110	1975	5000 to 8100 (9)	0.05 (q)	12/84	1986	(d)(q)
241-U-112	1980	8500 (9)		09/79	1986	(d)
67 Tanks		<750,000 - 1,050,000 (8)				

N/A = not applicable (not yet interim stabilized)

TABLE H-1. SINGLE-SHELL LEAK VOLUME ESTIMATES
(Sheet 2 of 5)

Footnotes:

(1) Current estimates [see reference(b)] are that 610 Kgallons of cooling water was added to Tank 241-A-105 from November 1970 to December 1978 to aid in evaporative cooling. In accordance with Dangerous Waste Regulations [Washington Administrative Code 173-303-070 (2)(a)(ii), as amended, Washington State Department of Ecology, 1990, Olympia, Washington], any of this cooling water that has been added and subsequently leaked from the tank must be classified as a waste and should be included in the total leak volume. In August 1991, the leak volume estimate for this tank was updated in accordance with the WAC regulations. Previous estimates excluded the cooling water leaks from the total leak volume estimates because the waste content (concentration) in the cooling water which leaked should be much less than the original liquid waste in the tank (the sludge is relatively insoluble). The total leak volume estimate in this report (10 Kgallons to 277 Kgallons) is based on the following (see References):

1. Reference (b) contains an estimate of 5 Kgallons to 15 Kgallons for the initial leak prior to August 1968.

2. Reference (b) contains an estimate of 5 Kgallons to 30 Kgallons for the leak while the tank was being sluiced from August 1968 to November 1970.

3. Reference (b) contains an estimate of 610 Kgallons of cooling water added to the tank from November 1970 to December 1978 but it was estimated that the leakage was small during this period. This reference contains the statement "Sufficient heat was generated in the tank to evaporate most, and perhaps nearly all, of this water." This results in a low estimate of zero gallons leakage from November 1970 to December 1978.

4. Reference (c) contains an estimate the 378 to 410 Kgallons evaporated out of the tank from November 1970 to December 1978. Subtracting the minimum evaporation estimate from the cooling water added estimate provides a range from 0 to 232 Kgallons of cooling water leakage from November 1970 to December 1978.

	Low Estimate	High Estimate
Prior to August 1968	5,000	15,000
August 1968 to November 1970	5,000	30,000
November 1970 to December 1978	0	232,000
Totals	10,000	277,000

(2) These leak volume estimates do not include (with some exceptions), such things as: (a) cooling/raw water leaks, (b) intrusions (rain infiltration) and subsequent leaks, (c) leaks inside the tank farm but not through the tank liner (surface leaks, pipeline leaks, leaks at the joint for the overflow or fill lines, etc.), and (d) leaks from catch tanks, diversion boxes, encasements, etc.

(3) In many cases, a leak was suspected long before it was identified or confirmed. For example, reference (d) shows that Tank 241-U-104 was suspected of leaking in 1956. The leak was "confirmed" in 1961. This report lists the "assumed leaker" date of 1961. Using present standards, Tank 241-U-104 would have been declared an assumed leaker in 1956. In 1984, the criteria designations of "suspected leaker," "questionable integrity," "confirmed leaker," "declared leaker," "borderline" and "dormant," were merged into one category now reported as "assumed leaker." See reference (f) for explanation of when, how long, and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single-shell tanks because of the nature of their design and instrumentation.

(4) *There has been an effort in the past few years to re-evaluate these leak volume estimates; however, the activity is not currently funded.*

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 3 of 5)

(5) The leak volume estimate date for these tanks is before the "declared leaker" date because the tank was in a "suspected leaker" or "questionable integrity" status; however, a leak volume had been estimated prior to the tank being reclassified.

(6) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicating continuing leak or movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations.

(7) Methods were used to estimate the leak volumes from these 19 tanks based on the assumption that their cumulative leakage is approximately the same as for 18 of the 24 tanks identified in footnote (9). For more details see reference (g). The total leak volume estimate for these tanks is 150 Kgallons (rounded to the nearest Kgallons), for an average of approximately 8 Kgallons for each of 19 tanks.

(8) The total has been rounded to the nearest 50 Kgallons. Upper bound values were used in many cases in developing these estimates. It is likely that some of these tanks have not actually leaked.

(9) Leak volume estimate is based solely on observed liquid level decreases in these tanks. This is considered to be the most accurate method for estimating leak volumes.

(10) The curie content shown is as listed in the reference document and is not decayed to a consistent date: therefore, a cumulative total is inappropriate.

(11) Tank 241-C-101 experienced a liquid level decrease in the late 1960s and was taken out of service and pumped to a "minimum heel" in December 1969. In 1970, the tank was classified as a "questionable integrity" tank. Liquid level data show decreases in level throughout the 1970s and the tank was saltwell pumped during the 1970s, ending in April 1979. The tank was reclassified as a "confirmed leaker" in January 1980. See references (q) and (s); refer to reference (s) for information on the potential for there to have been leaks from other C-farm tanks (specifically, C-102, C-103, and C-109).

(12) These dates indicate when the tanks were declared to be interim stabilized. In some cases, the official interim stabilization documents were issued at a later date. Also, in some cases, the field work associated with interim stabilization was completed at an earlier date.

(13) Tank T-111 was declared an assumed re-leaker on February 28, 1994, due to a decreasing trend in surface level measurement. This tank was pumped, and interim stabilization completed on February 22, 1995.

(14) Tank BX-111 was declared an assumed re-leaker in April 1993. Preparations for pumping were delayed, following an administrative hold placed on all tank farm operations in August 1993. Pumping resumed and the tank was declared interim stabilized on March 15, 1995.

(15) The leak volume and curie release estimates on SX-108, SX-109, SX-111, and SX-112 have been re-evaluated using a Historical Leak Model [see reference (u)]. In general, the model estimates are much higher than the values listed in the table, both for volume and curies released. The values listed in the table do not reflect this revised estimate because, "In particular, it is worth emphasizing that this report was never meant to be a definitive update for the leak baseline at the Hanford Site. It was rather meant to be an attempt to view the issue of leak inventories with a new and different methodology." (This quote is from the first page of the referenced report). Therefore, an uncertainty analysis to determine the applicability of this methodology is currently in progress.

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 4 of 5)

References:

(a) Murthy, K.S., et al, June 1983, *Assessment of Single-Shell Tank Residual Liquid Issues at Hanford Site, Washington*, PNL-4688, Pacific Northwest Laboratory, Richland, Washington.

(b) WHC, 1991a, *Tank 241-A-105 Leak Assessment*, WHC-MR-0264, Westinghouse Hanford Company, Richland, Washington.

(c) WHC, 1991b, *Tank 241-A-105 Evaporation Estimate 1970 Through 1978*, WHC-EP-0410, Westinghouse Hanford Company, Richland, Washington.

(d) Smith, D. A., January 1986, *Single-Shell Tank Isolation Safety Analysis Report*, SD-WM-SAR-006, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

(e) McCann, D. C., and T. S. Vail, September 1984, *Waste Status Summary*, RHO-RE-SR-14, Rockwell Hanford Operations, Richland, Washington.

(f) Catlin, R. J., March 1980, *Assessment of the Surveillance Program of the High-Level Waste Storage Tanks at Hanford*, Hanford Engineering Development Laboratory, Richland, Washington.

(g) Baumhardt, R. J., May 15, 1989, Letter to R. E. Gerton, U.S. Department of Energy-Richland Operations Office, *Single-Shell Tank Leak Volumes*, 8901832B R1, Westinghouse Hanford Company, Richland, Washington.

(h) WHC, 1990a, Occurrence Report, *Surface Level Measurement Decrease in Single-Shell Tank 241-AX-102*, WHC-UO-89-023-TF-05, Westinghouse Hanford Company, Richland, Washington.

(i) Groth, D. R., July 1, 1987, Internal Memorandum to R. J. Baumhardt, *Liquid Level Losses in Tanks 241-C-201, -202 and -204*, 65950-87-517, Westinghouse Hanford Company, Richland, Washington.

(j) Groth, D. R. and G. C. Owens, May 15, 1987, Internal Memorandum to J. H. Roecker, *Tank 103-A Integrity Evaluation*, Westinghouse Hanford Company, Richland, Washington.

(k) Campbell, G. D., July 8, 1988, Internal Memorandum to R. K. Welty, *Engineering Investigation: Interstitial Liquid Level Decrease in Tank 241-SX-104*, 13331-88-416, Westinghouse Hanford Company, Richland, Washington.

(l) ERDA, 1975, *Final Environmental Statement Waste Management Operations, Hanford Reservation, Richland, Washington*, ERDA-1538, 2 vols., U.S. Energy Research and Development Administration, Washington, D.C.

(m) WHC, 1992a, *Tank 241-SX-108 Leak Assessment*, WHC-MR-0300, Westinghouse Hanford Company, Richland, Washington.

(n) WHC, 1992b, *Tank 241-SX-109 Leak Assessment*, WHC-MR-0301, Westinghouse Hanford Company, Richland, Washington.

(o) WHC, 1992c, *Tank 241-SX-115 Leak Assessment*, WHC-MR-0302, Westinghouse Hanford Company, Richland, Washington.

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 5 of 5)

(p) WHC, 1992d, Occurrence Report, *Apparent Decrease in Liquid Level in Single Shell Underground Storage Tank 241-T-101, Leak Suspected; Investigation Continuing*, RL-WHC-TANKFARM-1992-0073, Westinghouse Hanford Company, Richland, Washington.

(q) WHC,1990b, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Westinghouse Hanford Company, Richland, Washington.

(r) WHC, 1993, Occurrence Report, *Single-Shell Underground Waste Storage Tank 241-BX-111 Surface Level Decrease and Change From Steady State Condition*, RL-WHC-TANKFARM-1993-0035, Westinghouse Hanford Company, Richland, Washington.

(s) WHC, 1993a, *Assessment of Unsaturated Zone Radionuclide Contamination Around Single-Shell Tanks 241-C-105 and 241-C-106, WHC-SD-EN-TI-185*, REV OA, Westinghouse Hanford Company, Richland, Washington.

(t) WHC, 1994, Occurrence Report, *Apparent Liquid Level Decrease in Single Shell Underground Storage Tank 241-T-111; Declared an Assumed Re-Leaker*, RL-WHC-TANKFARM-1994-0009, Westinghouse Hanford Company, Richland, Washington.

(u) HNF, 1998, Agnew, S. F. and R. A. Corbin, August 1998, *Analysis of SX Farm Leak Histories - Historical Leak Model*, (HLM), HNF-3233, Rev. 0, Los Alamos National Laboratory, Los Alamos, New Mexico

APPENDIX I

INTERIM STABILIZATION STATUS
CONTROLLED, CLEAN, AND STABLE STATUS

TABLE I-1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS (Sheet 1 of 3)

May 31, 1999

Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method
A-101	SOUND	N/A		C-101	ASMD LKR	11/83	AR	T-108	ASMD LKR	11/78	AR
A-102	SOUND	08/89	SN	C-102	SOUND	09/95	JET	T-109	ASMD LKR	12/84	AR
A-103	ASMD LKR	06/88	AR	C-103	SOUND	N/A		T-110	SOUND	N/A	
A-104	ASMD LKR	09/78	AR	C-104	SOUND	09/89	SN	T-111	ASMD LKR	02/95	JET
A-105	ASMD LKR	07/79	AR	C-105	SOUND	10/95	AR	T-112	SOUND	03/81	AR(2)(3)
A-106	SOUND	08/82	AR	C-106	SOUND	N/A		T-201	SOUND	04/81	AR (3)
AX-101	SOUND	N/A		C-107	SOUND	09/85	JET	T-202	SOUND	08/81	AR
AX-102	ASMD LKR	09/88	SN	C-108	SOUND	03/84	AR	T-203	SOUND	04/81	AR
AX-103	SOUND	08/87	AR	C-109	SOUND	11/83	AR	T-204	SOUND	08/81	AR
AX-104	ASMD LKR	08/81	AR	C-110	ASMD LKR	05/95	JET	TX-101	SOUND	02/84	AR
B-101	ASMD IKR	03/81	SN	C-111	ASMD LKR	03/84	SN	TX-102	SOUND	04/83	JET
B-102	SOUND	08/85	SN	C-112	SOUND	09/90	AR	TX-103	SOUND	08/83	JET
B-103	ASMD IKR	02/85	SN	C-201	ASMD LKR	03/82	AR	TX-104	SOUND	09/79	SN
B-104	SOUND	06/85	SN(2)	C-202	ASMD LKR	08/81	AR	TX-105	ASMD LKR	04/83	JET
B-105	ASMD IKR	12/84	AR	C-203	ASMD LKR	03/82	AR	TX-106	SOUND	06/83	JET
B-106	SOUND	03/86	SN	C-204	ASMD LKR	09/82	AR	TX-107	ASMD LKR	10/79	AR
B-107	ASMD LKR	03/85	SN	S-101	SOUND	N/A		TX-108	SOUND	03/83	JET
B-108	SOUND	05/85	SN	S-102	SOUND	N/A		TX-109	SOUND	04/83	JET
B-109	SOUND	04/85	SN	S-103	SOUND	N/A		TX-110	ASMD LKR	04/83	JET
B-110	ASMD LKR	12/84	AR(2)	S-104	ASMD LKR	12/84	AR	TX-111	SOUND	04/83	JET
B-111	ASMD LKR	06/85	SN)2)	S-105	SOUND	09/88	JET	TX-112	SOUND	04/83	JET
B-112	ASMD LKR	05/85	SN	S-106	SOUND	N/A		TX-113	ASMD LKR	04/83	JET
B-201	ASMD LKR	08/81	AR (3)	S-107	SOUND	N/A		TX-114	ASMD LKR	04/83	JET
B-202	SOUND	05/85	AR(2)	S-108	SOUND	12/96	JET	TX-115	ASMD LKR	09/83	JET
B-203	ASMD LKR	06/84	AR	S-109	SOUND	N/A		TX-116	ASMD LKR	04/83	JET
B-204	ASMD LKR	06/84	AR	S-110	SOUND	01/97	JET	TX-117	ASMD LKR	03/83	JET
BX-101	ASMD LKR	09/78	AR	S-111	SOUND	N/A		TX-118	SOUND	04/83	JET
BX-102	ASMD LKR	11/78	AR	S-112	SOUND	N/A		TY-101	ASMD LKR	04/83	JET
BX-103	SOUND	11/83	AR(2)	SX-101	SOUND	N/A		TY-102	SOUND	09/79	AR
BX-104	SOUND	09/89	SN	SX-102	SOUND	N/A		TY-103	ASMD LKR	02/83	JET
BX-105	SOUND	03/81	SN	SX-103	SOUND	N/A		TY-104	ASMD LKR	11/83	AR
BX-106	SOUND	07/95	SN	SX-104	ASMD LKR	N/A		TY-105	ASMD LKR	02/83	JET
BX-107	SOUND	09/90	JET	SX-105	SOUND	N/A		TY-106	ASMD LKR	11/78	AR
BX-108	ASMD LKR	07/79	SN	SX-106	SOUND	N/A		U-101	ASMD LKR	09/79	AR
BX-109	SOUND	09/90	JET	SX-107	ASMD LKR	10/79	AR	U-102	SOUND	N/A	
BX-110	ASMD LKR	08/85	SN	SX-108	ASMD LKR	08/79	AR	U-103	SOUND	N/A	
BX-111	ASMD LKR	03/95	JET	SX-109	ASMD LKR	05/81	AR	U-104	ASMD LKR	10/78	AR
BX-112	SOUND	09/90	JET	SX-110	ASMD LKR	08/79	AR	U-105	SOUND	N/A	
BY-101	SOUND	05/84	JET	SX-111	ASMD LKR	07/79	SN	U-106	SOUND	N/A	
BY-102	SOUND	04/95	JET	SX-112	ASMD LKR	07/79	AR	U-107	SOUND	N/A	
BY-103	ASMD LKR	11/97	JET	SX-113	ASMD LKR	11/78	AR	U-108	SOUND	N/A	
BY-104	SOUND	01/85	JET	SX-114	ASMD LKR	07/79	AR	U-109	SOUND	N/A	
BY-105	ASMD LKR	N/A		SX-115	ASMD LKR	09/78	AR	U-110	ASMD LKR	12/84	AR
BY-106	ASMD LKR	N/A		T-101	ASMD LKR	04/93	SN	U-111	SOUND	N/A	
BY-107	ASMD LKR	07/79	JET	T-102	SOUND	03/.81	AR(2)(3)	U-112	ASMD LKR	09/79	AR
BY-108	ASMD LKR	02/85	JET	T-103	ASMD LKR	11/83	AR	U-201	SOUND	08/79	AR
BY-109	SOUND	07/97	JET	T-104	SOUND	N/A		U-202	SOUND	08/79	SN
BY-110	SOUND	01/85	JET	T-105	SOUND	06/87	AR	U-203	SOUND	08/79	AR
BY-111	SOUND	01/85	JET	T-106	ASMD LKR	08/81	AR	U-204	SOUND	08/79	SN
BY-112	SOUND	06/84	JET	T-107	ASMD LKR	05/96	JET				

LEGEND:
- AR = Administratively interim stabilized
- JET = Saltwell jet pumped to remove drainable interstitial liquid
- SN = Supernate pumped (Non-Jet pumped)
- N/A = Not yet interim stabilized
- ASMD LKR = Assumed Leaker

Interim Stabilized Tanks	119
Not Yet Interim Stabilized	30
Total Single-Shell Tanks	149

TABLE I-1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS (sheet 2 of 2)

Footnotes:

(1) These dates indicate when the tanks were actually interim stabilized. In some cases, the official interim stabilization documents were issued at a later date.

(2) Although tanks B-104, BX-103, T-102 and T-112 met the interim stabilization administrative procedure at the time they were stabilized, they no longer meet the recently updated administrative procedure. The tanks were re-evaluated in 1996 and memo 9654456, J. H. Wicks to Dr. J. K. McClusky, DOE-RL, dated September 1996, was issued which recommended that no further pumping be performed on these tanks, based on an economic evaluation.

An intrusion investigation was completed on tank B-202 in 1996 because of a detected increase in surface level. As a result of this investigation, it was determined that this tank no longer meets the recently updated administrative procedure for 200 series tanks.

(3) Original Interim Stabilization data are missing on four tanks: B-201, T-102, T-112, and T-201.

TABLE I-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES

May 31, 1999
(sheet 1 of 2)

New single-shell tank interim stabilization milestones were negotiated in 1999 and are identified in the "Consent Decree." Even though the Consent Decree is not approved, the Office of River Protection is working to the Consent Decree pending final lodging with the court.

CONSENT DECREE

Attachments A-1 and A-2

Following is the schedule for pumping liquid waste from the remaining twenty-nine (29) single-shell tanks. This schedule is enforceable pursuant to the terms of the Decree except for the "Project Pumping Completion Dates" which are estimates only and not enforceable.

Tank Designation		Pumping Initiated	Projected Pumping Completion Date
1.	T-104	Already initiated	May 30, 1999
2.	T-110	Already initiated	May 30, 1999
3.	SX-104	Already initiated	December 30, 2000
4.	SX-106	Already initiated	December 30, 2000
5.	S-102	Already initiated	March 30, 2001
6.	S-106	Already initiated	March 30, 2001
7.	S-103	Already initiated	March 30, 2001
8.	U-103*	June 15, 2000	April 15, 2002
9.	U-105*	June 15, 2000	April 15, 2002
10.	U-102*	June 15, 2000	April 15, 2002
11.	U-109*	June 15, 2000	April 15, 2002
12.	A-101	October 30, 2000	September 30, 2003
13.	AX-101	October 30, 2000	September 30, 2003
14.	SX-105	March 15, 2001	February 28, 2003
15.	SX-103	March 15, 2001	February 28, 2003
16.	SX-101	March 15, 2001	February 28, 2003
17.	U-106*	March 15, 2001	February 28, 2003
18.	BY-106	July 15, 2001	June 30, 2003
19.	BY-105	July 15, 2001	June 30, 2003
20.	U-108	December 30, 2001	August 30, 2003
21.	U-107	December 30, 2001	August 30, 2003
22.	S-111	December 30, 2001	August 30, 2003
23.	SX-102	December 30, 2001	August 30, 2003
24.	U-111	November 30, 2002	September 30, 2003
25.	S-109	November 30, 2002	September 30, 2003
26.	S-112	November 30, 2002	September 30, 2003
27.	S-101	November 30, 2002	September 30, 2003
28.	S-107	November 30, 2002	September 30, 2003
29.	C-103	No later than December 30, 2000, DOE will determine whether the organic layer and pumpable liquids will be pumped from Tank C-103 together or separately, and will establish a deadline for initiating pumping of this tank. The parties will incorporate the initiation deadline into this schedule as provided in Section VI of the Decree.	

* Tanks containing organic complexants.

TABLE I-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES
(sheet 2 of 2)

Completion of Interim Stabilization. DOE will complete interim stabilization of all 29 single-shell tanks listed above by September 30, 2004.

Percentage of Pumpable Liquid Remaining to be Removed.

93% of Total Liquid	9/30/1999
38% of Organic Complexed Pumpable Liquids	9/30/2000
5% of Organic Complexed Pumpable Liquids	9/30/2001
18% of Total Liquid	9/30/2002
2% of Total Liquid	9/30/2003

The "percentage of pumpable liquid remaining to be removed" is calculated by dividing the volume of pumpable liquid remaining to be removed from tanks not yet interim stabilized by the sum of the total amount of liquid that has been pumped and the pumpable liquid that remains to be pumped from all tanks.

TABLE I-3. SINGLE-SHELL TANKS STABILIZATION STATUS SUMMARY

May 31, 1999

Partial Interim Isolated (PI)

EAST AREA	WEST AREA
A-101	S-101
A-102	S-102
AX-101	S-103
BY-102	S-106
BY-103	S-107
BY-105	S-108
BY-106	S-109
BY-109	S-110
C-103	S-111
C-105	S-112
C-106	SX-101
East Area 11	SX-102
	SX-103
	SX-104
	SX-105
	SX-106
	T-101
	T-104
	T-107
	T-110
	T-111
	U-102
	U-103
	U-105
	U-106
	U-107
	U-108
	U-109
	U-110
	U-111
	West Area 29
	Total 40

Intrusion Prevention Completed (IP)

EAST AREA	WEST AREA
A-103	S-104
A-104	S-105
A-105	SX-107
A-106	SX-108
AX-102	SX-109
AX-103	SX-110
AX-104	SX-111
B-FARM - 16 tanks	SX-112
BX-FARM - 12 tanks	SX-113
BY-101	SX-114
BY-104	SX-115
BY-107	T-102
BY-108	T-103
BY-110	T-105
BY-111	T-106
BY-112	T-108
C-101	T-109
C-102	T-112
C-104	T-201
C-107	T-202
C-108	T-203
C-109	T-204
C-110	TX-FARM - 18 tanks
C-111	TY-FARM - 6 tanks
C-112	U-101
C-201	U-104
C-202	U-112
C-203	U-102
C-204	U-202
East Area 55	U-203
	U-204
	West Area 53
	Total 108

Interim Stabilized (IS)

EAST AREA	WEST AREA
A-102	S-104
A-103	S-105
A-104	S-108
A-105	S-110
A-106	SX-107
AX-102	SX-108
AX-103	SX-109
AX-104	SX-110
B-FARM - 16 tanks	SX-111
BX-FARM - 12 tanks	SX-112
BY-101	SX-113
BY-102	SX-114
BY-103	SX-115
BY-104	T-101
BY-107	T-102
BY-108	T-103
BY-109	T-105
BY-110	T-106
BY-111	T-107
BY-112	T-108
C-101	T-109
C-102	T-111
C-104	T-112
C-105	T-201
C-107	T-202
C-108	T-203
C-109	T-204
C-110	TX-FARM - 18 tanks
C-111	TY-FARM - 6 tanks
C-112	U-101
C-201	U-104
C-202	U-110
C-203	U-112
C-204	U-201
East Area 60	U-202
	U-203
	U-204
	West Area 59
	Total 119

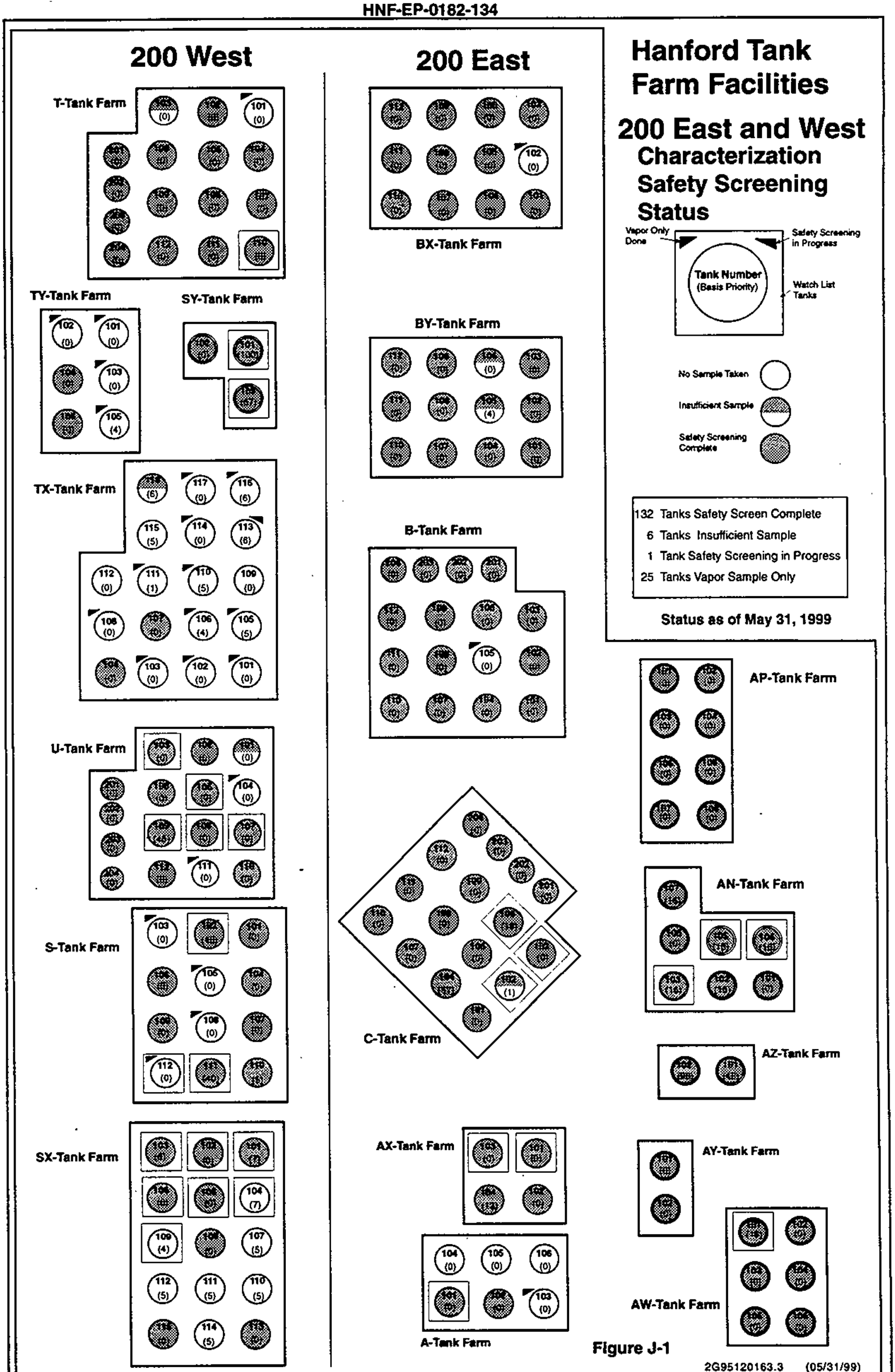
Controlled, Clean, and Stable (CCS)

EAST AREA	WEST AREA
BX-FARM - 12 Tanks	TX-FARM - 18 tanks
	TY FARM - 6 tanks
East Area 12	West Area 24
	Total 36

Note: CCS activities have been deferred until funding is available.

APPENDIX J

CHARACTERIZATION SAFETY SCREENING STATUS



Hanford Tank Farm Facilities
200 East and West Characterization Safety Screening Status
200 West
200 East
T-Tank Farm
TY-Tank Farm
SY-Tank Farm
TX-Tank Farm
U-Tank Farm
S-Tank Farm
SX-Tank Farm
BX-Tank Farm
BY-Tank Farm
B-Tank Farm
C-Tank Farm
AX-Tank Farm
A-Tank Farm
AP-Tank Farm
AN-Tank Farm
AZ-Tank Farm
AY-Tank Farm
AW-Tank Farm
Vapor Only Done
Safety Screening in Progress
Tank Number (Basis Priority)
Watch List Tanks
No Sample Taken
Insufficient Sample
Safety Screening Complete
132 Tanks Safety Screen Complete
6 Tanks Insufficient Sample
1 Tank Safety Screening in Progress
25 Tanks Vapor Sample Only
Status as of May 31, 1999
2G95120163.3 (05/31/99)

Figure J-1

FIGURE J-1. CHARACTERIZATION SAFETY SCREENING STATUS LEGEND

(Sheet 2 of 2)

May 31, 1999

200 East/West	The chart divides the two areas.
Tank Farms	Each tank farm is represented by a rough schematic of the tank layout and a heading naming the farm.
Circles	Tanks are depicted by a circle for single-shell tanks and a double circle for double-shell tanks.
Boxes	A thin line box around a tank inside a tank farm denotes "Watch List" status, in concurrence with Table A-1 of this document.
Numbers in Circles	The top number is the tank number. The number in parentheses is a weighted priority number, described in WHC-SD-WM-TA-164, "Tank Waste Characterization Basis." The numbers can be compared to each other to gain appreciation of relative priority: the higher the number, the greater the priority to sample and analyze.
Underlined Numbers	If a number in parenthesis is underlined, it is denoted as a "Characterization Basis Tank," as described in WHC-SD-WM-TA-164, "Tank Waste Characterization Basis." These are key tanks taken from the priority list that are of principal interest to the Characterization Program.
Circle Shading	The shading in the circle indicates the degree to which sampling and analysis are complete per requirements described in applicable Data Quality Objectives (DQOs). If blank, no characterization sampling has taken place. If fully shaded, the sampling and analysis are complete for each DQO applicable to that tank. Tanks in which characterization has begun but is not complete are designated by being half shaded.
Corner Triangles	Small triangles near a tank circle give further information on half-shaded tanks. Upper left corner triangles indicate that vapor samples have been taken from the tank. Lower left-hand corner triangles indicate that the tank has been sampled, analyzed, and a formal report has been written on the condensed phase sampling. Further status of the tank will be determined after review of the report is complete. Lower right-hand corner triangles indicate that some review has been completed and it has been determined that more sampling is needed to resolve the DQO requirements. Absence of triangles from a half shaded tank indicates recent condensed phase sampling.

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